Veeam ONE

Version 6.0

User Guide
For VMware vSphere Environments
April, 2012

#1 for Virtualization™ Management and Data Protection

Microsoft Partner
Gold Systems Management
Silver Virtualization

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ABOUT THIS GUIDE

Description

This user guide provides information about main features and use of Veeam ONE in VMware vSphere environments. The document applies to version 6 and all subsequent versions until it is replaced with a new edition.

The document provides detailed configuration and usage guidelines for the three integrated Veeam ONE components: Veeam ONE Monitor, Veeam ONE Reporter and Veeam ONE Business View.

Intended Audience

The guide is designed for anyone who plans to use the Veeam ONE solution. It is primarily aimed at administrators managing VMware vSphere environments, but can also be helpful for other current and perspective Veeam ONE users.

Conventions

The following formatting conventions apply throughout this user guide:

Style	Used for
Boldface	User interface elements (names of dialog windows, buttons and so on).
Italics	Titles, special terms and general emphasis, paths, file and folder names.
Green	Cross reference links and hyperlinks to external sources.

Critical information, recommendations, notes, tips and other noteworthy information is provided in the following format:

Note Example of a note or recommendation. Critical information and helpful tips are given in a similar way.

References to Technical Documentation

If you have any questions regarding Veeam ONE, check the following resources:

- Veeam ONE product page available at www.veeam.com/virtualization-management-one-solution/resources.html contains extensive information, documents and resources to help you get to know the Veeam ONE solution
- Community forum can be found at forums.veeam.com

Technical Support

Should you have a product issue, suggestion or question, please visit our Customer Center at www.veeam.com/support to open a case, search our knowledge base, reference documentation, manage your license or obtain the latest product release.

For better experience please provide the following when contacting our technical support:

1. Information about operating system and database you are using.
2. Error message and/or accurate description of the problem.
3. Log files.

Log files for Veeam ONE Monitor, Veeam ONE Reporter and Veeam ONE Business View can be obtained as follows:

- **Veeam ONE Monitor**: in the Veeam ONE Monitor console, select **Help > Support Information** from the main menu. Veeam ONE Monitor will export log information to an archive; the archive can be downloaded from the machine where Veeam ONE Monitor Client is installed.

- **Veeam ONE Reporter**: in the Veeam ONE Reporter console, open the **Configuration** view and select **About** in the menu on the left.
    - The **Website information** section displays the path to Veeam ONE Reporting Client logs (on the machine where the Veeam ONE Web UI component is installed).
    - The **Server information** section displays the path to Veeam ONE Reporting Server logs (on the machine where the Veeam ONE Server component is installed).
- **Veeam ONE Business View**: in the Veeam ONE Business View console, open the **Configuration** view and select **About** in the menu on the left.
    - The **Web site information** section displays the path to Veeam ONE Business View website logs (on the machine where the Veeam ONE Web UI component is installed).
    - The **Service information** section displays the path to Veeam ONE Business View Service logs (on the machine where the Veeam ONE Web UI component is installed).

ABOUT VEEAM ONE

Veeam ONE is a virtual infrastructure management solution for virtual environments of any scale and complexity. It delivers real-time monitoring on health and performance of virtual environments, provides intelligent reporting and offers business-based views of the virtual infrastructure topology to simplify management and expedite decision-making.

The Veeam ONE solution incorporates three previously standalone products:

- **Veeam ONE Monitor** is the primary tool used for monitoring your virtual environment. In the Veeam ONE Monitor console, you can manage, view and interact with alerts and monitoring data, analyze performance of virtual infrastructure objects, troubleshot issues that occur in your virtual environment, generate reports and administer monitoring settings.
- **Veeam ONE Reporter** helps you verify configuration issues, optimize resource allocation and utilization, track implemented changes and plan capacity growth across virtualized datacenters.
- **Veeam ONE Business View** lets you group your virtual infrastructure objects into such categories as business unit, purpose, configuration entity, or any other. Your business categorization model is further applied to the monitoring and reporting functionality to simplify management and aid transparency of operations for business across large virtual environments.

Veeam ONE Monitor, Veeam ONE Reporter and Veeam ONE Business View are installed with one setup and provide a single cohesive solution. Veeam ONE components integrate with each other in a number of areas as described below.

Connection to Virtual Servers

To allow Veeam ONE collect information about your virtual infrastructure, you need to connect vCenter Servers or standalone ESX(i) hosts to Veeam ONE. Virtual server connection settings that you provide are automatically propagated to all Veeam ONE components – for example, if you connect an ESX(i) host to Veeam ONE Monitor, this host automatically becomes available in Veeam ONE Reporter and Veeam ONE Business View. Thus, there is need to configure connections to vCenter Servers or ESX(i) hosts for every Veeam ONE component individually.

- If you connect the default vCenter Server during installation, Veeam ONE will add a connection to this vCenter Server in Veeam ONE Monitor and will automatically configure collection jobs for this server for Veeam ONE Reporter and Veeam ONE Business View.
- When you connect a new virtual server to the Veeam ONE Monitor, Veeam ONE Business View or Veeam ONE Reporter console, Veeam ONE will automatically configure a connection to this server for other components as well.

  For example, if you add a vCenter Server in the Veeam ONE Monitor console, Veeam ONE will automatically configure for Veeam ONE Business View and Veeam ONE Reporter a daily collection job scheduled to run on workdays for this vCenter Server. Likewise, if you create a collection job for a vCenter Server in Veeam ONE Reporter, Veeam ONE will automatically configure a collection job for this vCenter Server in Veeam ONE Business View and will add a connection to this vCenter Server in Veeam ONE Monitor.

  The same rule applies when you change connection settings of a virtual server in any of the Veeam ONE components (for example, access credentials) – the changes are adapted across all components.
- When you remove a virtual server from Veeam ONE Monitor, Veeam ONE Business View or Veeam ONE Reporter, Veeam ONE will automatically remove the server from all other components.

Data Collection

Veeam ONE components collect virtual infrastructure data for monitoring, reporting and business categorization of your virtual environment as follows:

- **Veeam ONE Monitor** collects performance, events, topology, configuration and audit data from connected vCenter Servers or ESX(i) hosts in real time.
- **Veeam ONE Reporter** and **Veeam ONE Business View** gather topology, configuration and categorization data from vCenter Servers or ESX(i) hosts. Veeam ONE Reporter and Veeam ONE Business View share the same collection server that is responsible for collecting data from virtual infrastructure management servers.

Collected data is stored to the same Veeam ONE database and shared for all Veeam ONE components. For example, Veeam ONE Reporter does not collect performance, audit and events data; instead, it retrieves from the Veeam ONE database real-time performance, audit and events data that is collected by Veeam ONE Monitor. This eliminates the necessity to perform duplicate data collection and reduces the collection overhead on virtual servers.

License Management

Veeam ONE uses one license for all of its components. The license file can be provided either during installation or after you install Veeam ONE. Veeam ONE propagates the license to all of its components, so there is no need to manage the license for each component individually. For more information about Veeam ONE licensing, refer to *Veeam ONE Deployment Guide*.

Business Categorization

Veeam ONE Reporter and Veeam ONE Monitor integrate with Veeam ONE Business View out of the box. Veeam ONE Business View categorization model and category values assigned to virtual infrastructure objects are stored to the shared Veeam ONE database and are automatically propagated to Veeam ONE Monitor and Veeam ONE Reporter. Thus, there is no need to perform any additional steps for integration with Veeam ONE Business View.

Security Groups

Veeam ONE uses the same security model for all its components. To be able to access Veeam ONE Monitor, Veeam ONE Reporter or Veeam ONE Business View, the user should be included into one of Veeam ONE security groups on the computer where Veeam ONE is installed – *Veeam ONE Administrators* or *View ONE Users*. For more information on security groups and privileges, refer to *Veeam ONE Deployment Guide*.

VEEAM ONE MONITOR

OVERVIEW

Veeam ONE Monitor – a part of an integrated Veeam ONE solution – is the primary tool used for monitoring your VMware vSphere environment. In the Veeam ONE Monitor console, you can manage, view and interact with alerts and monitoring data, analyze performance of virtual infrastructure objects, generate reports and administer monitoring settings. Veeam ONE Monitor provides complete visibility of your virtual infrastructure and helps you speed up troubleshooting and quickly isolate root causes of performance issues before they become problems.

Veeam ONE Monitor features the following options and functionality:

Support for Heterogeneous Virtual Environments

Veeam ONE Monitor is designed for professional use in VMware vSphere and Microsoft Hyper-V environments. Monitoring and alerting capabilities for VMware vSphere and Microsoft Hyper-V virtual environments are available from a single Veeam ONE Monitor console.

Client/Server Architecture

Veeam ONE enables multi-admin access to performance data without affecting ESX(i) servers and vCenter performance or changing the access policy. It gathers all performance information into the backend database, allowing users to access the infrastructure-wide performance data and reporting.

Support for Multiple vCenter Servers

Veeam ONE Monitor provides a possibility to gather monitoring information from large virtual deployments with multiple vCenter Servers – all from a single console.

ESX(i) Server and vCenter Compatibility

Veeam ONE Monitor is fully compatible with ESX 3.5, 4.0, ESXi 3.5, 4.0, 5.0 and VirtualCenter 2.5, vCenter Server 4.0, 5.0.

Integrated or Standalone Monitoring

Veeam ONE Monitor is integrated with vCenter Server to provide you with cluster-aware monitoring of your virtual machines. If a VM is moved to another server in the cluster by DRS or manually, Veeam ONE Monitor will continue gathering performance data from it. For small datacenters or development labs running without a vCenter Server, Veeam ONE Monitor can still provide useful monitoring, alerting and reporting for multiple ESX(i) hosts. SNMP traps can be used to feed data into other popular system monitors, such as CA Unicenter, BMC Patrol, IBM Tivoli or HP OpenView.

ESX(i) Host Hardware Information

Veeam ONE Monitor allows monitoring the state of ESX(i) host hardware sensors, providing information on the ESX(i) host memory, CPU processors and so on. It uses status indicators to alert administrators on threshold violations, performance fall and subsystems failures.

Datastore Monitoring

Veeam ONE Monitor adds the level of datastore to virtual infrastructure monitoring. To trace the datastore state, it uses the disk space and disk I/O metrics, and alerts on all disk issues such as bus resets and aborts of commands sent to the disk.

Advanced Monitoring Options

To provide enhanced control over the virtual environment, Veeam ONE Monitor features a number of advanced monitoring options: viewing processes and services running on vCenter Server, ESX host or VM, logging on to the VM console and starting vSphere Client from Veeam ONE Monitor.

Historical Reports

To obtain a point-in-time view of your virtual environment, you can create reports right from the Veeam ONE Monitor console. Veeam ONE Monitor uses instrumentation of Veeam ONE Reporter – with a couple of click, you can generate HTML reports that summarize virtual infrastructure and performance statistics, or switch to the Veeam ONE Reporter console to create custom reports.

Alarms

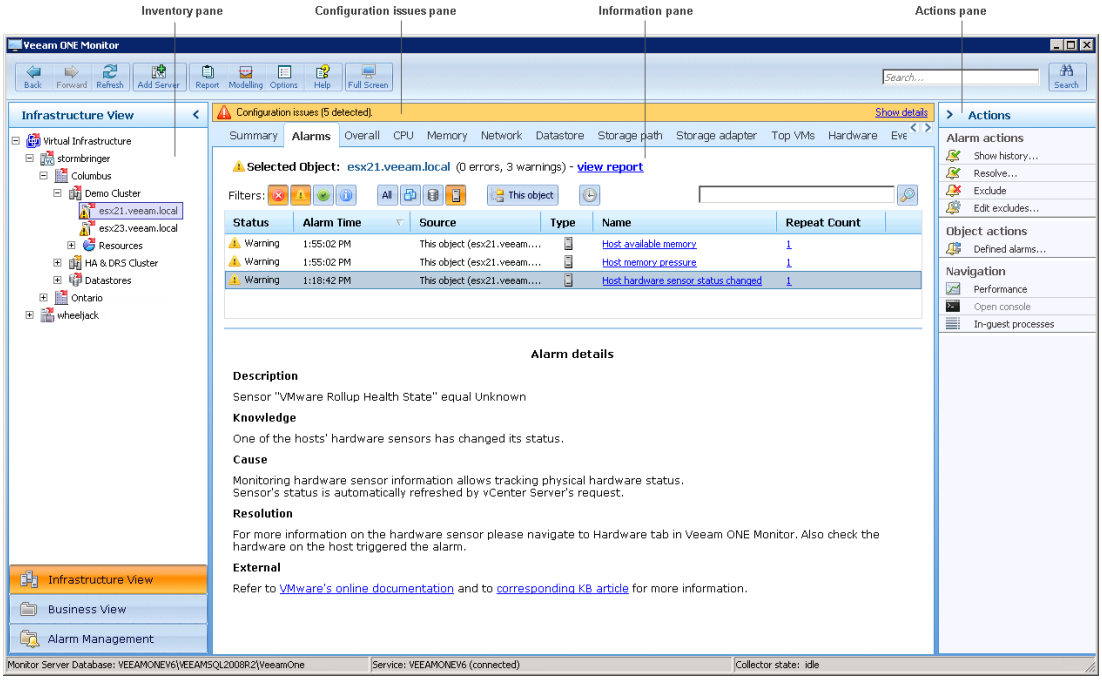
With Veeam ONE Monitor alarms, you can easily set up email notifications and SNMP traps or run custom notification scripts for important events such as VM power off, CPU utilization level excess and so on. Alarms modelling allows you to estimate the number of alarms to be received and adjust the alarms settings in case important information is not received or too many false positive alarms are sent. The suppressing alarms feature makes it possible to eliminate sending multiple alarms at important virtual infrastructure activities (for example, backup).

Business View Categorization

Veeam ONE Monitor uses categorization data from Veeam ONE Business View to build a business topology of virtual infrastructure apart from a traditional vCenter Server hierarchy and provide you with a possibility to monitor and alert of your virtual infrastructure presented in business terms.

Working Area

The main window of Veeam ONE Monitor is logically split into panes, each responsible for performing a specific function.



Inventory Pane

The **Inventory pane** shows the hierarchy of objects with which you can work. The contents of the information pane depend on the object that is currently selected in the inventory pane. The buttons at the bottom of the inventory pane allow you to switch between different inventory views:

- **Infrastructure View** displays a hierarchy of objects added for monitoring – vCenter Servers, ESX(i) hosts, resource pools, virtual machines, datastores and so on.

  Nodes in the virtual infrastructure tree reflect the state of a corresponding object – if there exist any unresolved alarms for an object, Veeam ONE Monitor displays on the node an alarm icon with the highest severity. To facilitate search for affected objects, Veeam ONE Monitor also reflects the state of child objects on parent nodes. For example, if an error was triggered on a host, the error icon will be displayed on the host node, cluster node and vCenter Server node. If required, you can change Veeam ONE Monitor client settings to display icons next to affected objects only. For details, see the Adjusting Veeam ONE Monitor Client Settings section.

- **Business View** displays a list of categorization groups configured in Veeam ONE Business View. It presents the virtual infrastructure topology in business terms and allows you to monitor, alert and report on custom categorization units in your virtual environment. For details, refer to the Monitoring Business View Groups section.

- **Alarm Management** inventory pane displays an alarm management tree with alarm types. Use the **Alarm Management** view to manage predefined alarms or create new ones. For details, refer to the Managing Alarms section.

Information Pane

The **Information pane** represents the main "working area" used for managing alarms, viewing performance data and accomplishing additional actions for monitoring your virtual environment (for example, viewing host hardware data and viewing VM guest OS processes). Tabs in the information pane allow you to switch between Veeam ONE Monitor dashboards. The set of

available dashboards varies depending on the object that is selected in the inventory pane. For more information, refer to the Monitoring Virtual Environment section.

Configuration Issues Pane

The **Configuration Issues** pane displays information on alarms that fired as a result of internal Veeam ONE Monitor configuration issues (such as lost connection to a virtual server, data collection failure and so on). To view details of internal alarms, click the **Show details** link on the right. For more information on working with internal alarms, refer to the Monitoring Internal Alarms section.

Actions Pane

The **Actions** pane, available on the **Alarms** dashboard displays links to tasks and commands that can be initiated by users. Availability of actions depends on the type of object you select in the inventory pane. For example, if you select a VM object in the inventory, alarm actions, object actions and navigation actions will become available in the **Actions** pane. If you select a storage object in the inventory, the **Open console** and **In-guest processes** tasks will be disabled. For more information on working with alarm actions, refer to the Monitoring Alarms section.

System Tray Icon

To facilitate monitoring of your virtual infrastructure, Veeam ONE Monitor displays its icon in the system tray as the status indicator. If the virtual environment is functioning properly, the indicator color will be green. If a warning or error is triggered, the indicator color will turn to yellow and red, correspondingly. As soon as the virtual infrastructure health state returns to normal, the indicator color changes back to green. To learn about the number of warnings and errors that have occurred, move the cursor over the icon.

Full Screen Mode

Veeam ONE Monitor can be used in full screen mode. This mode allows you to display only the information pane for the selected object on your screen without unnecessary distraction. To switch to full screen mode, do one of the following:

- Press **F11** on the keyboard
- Click the **Full Screen** button in the toolbar

In the full screen mode, the toolbar is not displayed at all, which allows you to concentrate on monitoring the virtual environment state and have only the most crucial information displayed. You can use the arrow button in the top left corner of the screen to toggle the inventory pane. To exit full screen mode, click the **Full Screen** button in the top right corner or press **F11** on the keyboard.

Operation Modes

Veeam ONE Monitor can be run in two operation modes – the full mode and the read-only mode.

- The full mode is available for users who are included in the *Veeam ONE Administrators* group on the Veeam ONE server. When Veeam ONE Monitor runs in the full mode, all of its functionality is available – you can change Veeam ONE Monitor configuration and perform all types of monitoring activities.
- The read-only mode is available for users who are included in the *Veeam ONE Users* group on the Veeam ONE server. In this mode, all actions that change configuration and data of the Veeam ONE Monitor are prohibited. For example, it is not possible to add, remove or edit connections to virtual servers, manage alarms, change Veeam ONE Monitor server settings; you need to manually provide access credentials to access the vSphere Client, and so on.

Alarms

With Veeam ONE Monitor, you can create and configure alarms that will inform you about important events and changes in the monitored virtual environment. The ability to be alerted of changes in your virtual environment allows for faster administrator response to critical issues, helping to maintain the overall health of the virtual infrastructure.

Alarms can be applied to a single object within the virtual environment (for example, to a cluster, host, virtual machine, VM container) and to a group of objects (for example, all virtual machines running on the same host or even in the whole virtual environment). Veeam ONE Monitor offers an extended set of rules and different severity levels, allowing you to create a custom alarm scheme complying with specific requirements of your virtual environment.

Out of the box Veeam ONE Monitor comes with 118 predefined alarms for monitoring your VMware vSphere virtual environment. Predefined alarms are based on best practices for a common virtual environment and in addition include an extensive knowledge base. When a problem occurs, you will not only be alerted, but will also have all the necessary information for troubleshooting and finding the root cause of the issue.

In addition to alarms for monitoring your virtual environment, Veeam ONE Monitor includes a set of internal predefined alarms that alert on data collection issues and problems virtual server connection.

Alarm Rules

According to the object selected for alerting, alarms are divided into several types. For each type, there is its own set of alarm rules - conditions under which alarms are triggered. Veeam ONE Monitor offers the next rules for different types of alarms.

vCenter Server

- **Event based rule**. An alarm will be triggered if some vCenter-related event is generated.
- **Power or connection state changes**. An alarm will be triggered if the state of vCenter Server is equal or not equal to the specified value (for example, if the vCenter Server is not responding).

Cluster

- **Event based rule**. An alarm will be triggered if some cluster-related event is generated.

Host

- **Event based rule**. An alarm will be triggered if some host-related event is generated.
- **Hardware sensor state changes**. An alarm will be trigged if the sensor state reports to be equal or not equal to a specific state value (Normal, Warning, Alert).
- **Number of VMs is out of allowed range**. An alarm will be triggered if the number of running, powered off or suspended VMs on the ESX(i) host exceeds the specified value. This type of alarm can be configured if it is necessary to limit the number of VMs running on the ESX(i) host at the same time to avoid the host overload.
- **Power or connection state changes**. An alarm will be triggered if the host state reports to be equal or not equal to a specific state value (for example, if the ESX(i) host is not responding).
- **Resource usage is out of allowed range**. An alarm will be triggered if the specified counter is above or below the specified value (for example, if the CPU usage exceeds 75%).

Virtual Machine

- **Event based rule**. An alarm will be triggered if some VM-related event is generated (for example, if the MAC address of the VM conflicts with the MAC address of another VM existing in the virtual infrastructure).
- **Heartbeat is missing**. An alarm will be triggered if a monitored virtual machine is not available or overloaded for a specific period of time (for example, if heartbeat is missing for 5 minutes).

- **Power or connection state changes**. An alarm will be triggered if the state of the VM reports to be equal or not equal to the specified state value (for example, if the VM is suspended).
- **Resource usage is out of allowed range**. An alarm will be triggered if the specified counter is above or below the specified value (for example, if the CPU ready level exceeds 5%).
- **Guest volumes are running out of free disk space**. An alarm will be triggered if available disk space on guest volumes is below the specified value. You can select to specify the amount of due free space as an absolute value (for example, if free disk space falls below 1 GB) or a relative value (for example, if free disk space falls below 10% of total space).
- **Snapshot age for VM has exceeded the configured threshold**. An alarm will be triggered if any snapshot is older than a specified number of hours. This rule helps monitor forgotten snapshots that are consuming valuable storage space and degrading performance of virtual machines.
- **Snapshot size for VM is out of allowed range**. An alarm will be triggered if the size of the VM snapshot is above or below the specified value. You can select to specify the size of the snapshot as an absolute value (for example, if the snapshot size exceeds 5 GB) or a relative value (for example, if the snapshot size exceeds 10% of total available disk space).

Datastore

- **Event based rule**. An alarm will be triggered if some datastore-related event is generated.
- **Datastore is running out of free space**. An alarm will be triggered if free space on the datastore is above or below the specified value. You can select to specify the free space threshold as an absolute value (for example, if the datastore space should not fall below 10 GB) or a relative value (for example, if the datastore free space should not fall below 15% of total space).
- **Datastore provisioned space**. An alarm will be triggered if the difference between the provisioned disk space and the datastore capacity is above the specified value. You can select to specify the difference as an absolute value (for example, if the provisioned disk space should not exceed datastore capacity by more than 100 GB) or a relative value (for example, if the provisioned disk space should not exceed 400% compared to the datastore capacity).
- **Performance counter is out of allowed range**. An alarm will be triggered if the specified counter is above or below the specified value (for example, if the datastore I\O threshold is violated).
- **Power or connection state changes**. An alarm will be triggered if the state of the datastore reports to be equal or not equal to the specified state value (for example, if the datastore is not accessible).

Any Object

- **Event based rule**. An alarm will be triggered if some event is generated on any object.

Alarm Severity

When alarms are configured, every rule is associated with one of alarm severity levels. The severity level defines the alarm criticality and its impact on the virtual infrastructure health. Veeam ONE Monitor offers the following severity levels:

- **Information** – indicates general information about the condition of a virtual infrastructure object.
- **Warning** – indicates a potential problem or non-critical issue that needs your attention. If the issue is left without attention, it might lead to a major problem.
- **Error** – indicates a critical situation or a major problem that requires immediate action.

- **Resolved** – indicates that the issue is eliminated because of the changed conditions or that the alarm was resolved manually.

Different severity levels may be defined for conditions of different intensity. For example, if the level of memory usage should not exceed 75%, the following rules may be created:

- If the memory usage is over 70%, an alarm with the *Warning* severity level will be triggered.
- If the memory usage is over 75%, an alarm with the *Error* severity level will be triggered.

That is, if the memory usage level is constantly growing and exceeds 70%, a warning alarm will be triggered, notifying about a potentially dangerous situation. If the memory usage level keeps on growing and exceeds the level of 75%, an error alarm notifying about severe danger will be triggered.

Alarm Notification Options

To ensure that you do not miss critical changes or events that occur in your virtual environment, you can configure Veeam ONE Monitor to send an SNMP trap, send email notifications, run a custom notification script (or perform all these actions at once) when a specific alarm is triggered.

For configuring email notification, Veeam ONE Monitor provides two possibilities:

- You can either explicitly specify recipients for every alarm on which you want to be notified.
- You add recipients to the default notification group in Veeam ONE server settings and then configure the alarm to send notifications to the whole group. This can be useful if you want to notify multiple monitoring operators or administrators when a critical alarm fires or when the alarm changes its status.

For more details on alarm notification options, refer to the Creating Alarms > Step 6. Specify Alarm Actions section.

Advanced Alarm Options

To ensure trouble-free and safe work with alarms, Veeam ONE Monitor provides advanced options of alarms configuring: alarm suppressing and alarm modelling.

Alarm suppressing is used to disregard events when specific virtual infrastructure activities are performed and, therefore, eliminate alarms sending. During resource-consuming operations, such as backup, Veeam ONE Monitor may inform the user about the increased activity, sending a great number of alarms. The alarms suppressing feature allows you to "switch off" alarms sending during such activities, or at a specific period of time when such activities are performed.

Alarms modelling may be used to verify the created alarm scheme and estimate the need of adjusting alarm settings. During alarm modelling, the configured alarms data is applied to the alarms history, therefore, producing a forecast on how many alarms will be sent over a specific period of time. If the obtained number is too great, the alarms threshold may need to be lowered to avoid receiving useless alarms; if the number is too small, the alarms sensitivity may need to be increased not to miss important alerts.

Events

Along with parameters and statistics data on the virtual infrastructure objects, Veeam ONE Monitor displays information about events that occur within your virtual environment for the monitored period. Veeam ONE Monitor works with vCenter Server/ESX(i) tasks: it loads all tasks and events from the vCenter Server. When Veeam ONE Monitor loads tasks from the vCenter Server, it creates two events for each task – one informing about the task start and the other informing about task end.

The list of events is displayed on the **Events** tab of Veeam ONE Monitor. For every event, detailed information is provided: its type, description, time of occurrence, target and so on.

Events are displayed as a list of alerts but can also be viewed in the performance charts. Viewing events on the performance charts can be helpful if there is a necessity to learn the reasons for changes in the performance behavior. To learn more, see the Viewing Events in Performance Charts section.

Reports

Besides monitoring the virtual environment on the on-going basis, Veeam ONE Monitor enables you to generate custom graphic reports containing information on the virtual environment inventory, performance and other details. With the help of reports, you can check the status of your resources at any point of time, analyze and plan the growth of your virtual environment, as well as use reports for documenting purposes. For details, refer to the Generating Reports section.

Advanced Monitoring Options

To enable optimized monitoring and provide enhanced control over the virtual environment, Veeam ONE Monitor features a number of advanced options that include the following ones.

- **Using VM console**. This option allows you to log on to the VM guest OS to perform administrative tasks right from the main application window. This option is implemented for both Windows-based and Linux-based OS.
- **Viewing top load and lowest load information**. Along with the performance charts, Veeam ONE Monitor provides information on top and bottom consumers of resources for some period of time.
- **Monitoring ESX(i) host hardware status**. This option allows you to check information and state of the ESX(i) host hardware subsystems: memory, processors, software components and so on.
- **Running vSphere Client**. This option enables you to start vSphere Client from the main application window.
- **Viewing vCenter Server, ESX host and VM processes**. This option allows you to view and end processes, and restart running services.

CONFIGURING VEEAM ONE MONITOR

To start working with the Veeam ONE Monitor, you need to perform a number of steps for its initial configuration:

1. Connect virtual servers to Veeam ONE Monitor. You can connect vCenter Servers or standalone ESX(i) hosts. For details, refer to the Working with Monitored Objects section.
2. Create new alarms or modify predefined alarms to suit your monitoring needs. For details, refer to the Managing Alarms section.
3. Review and adjust Veeam ONE Monitor client and server settings if necessary. For details, refer to the Configuring Veeam ONE Monitor Settings section.

Working with Monitored Objects

This section describes the first steps you should take to start working with Veeam ONE Monitor: adding virtual servers, changing connection settings for the added objects and removing monitored objects.

Adding Objects to Be Monitored

To start monitoring your virtual environment, you should add a vCenter Server or standalone ESX(i) hosts from which Veeam ONE Monitor will collect data.

Note that this step is not required if you have already connected the necessary virtual server as a default VMware server during Veeam ONE installation, or if you have previously connected virtual servers via Veeam ONE Business View or Veeam ONE Reporter interface.

When you add a virtual server to be monitored, Veeam ONE Monitor displays the hierarchy of child virtual infrastructure objects for the added object in the inventory pane. In addition, Veeam ONE Monitor displays a list of datastores — under the **Datacenter > Datastores** node for vCenter Server and under the **Datastores** node for ESX(i) host.

To add an object to be monitored, follow the next steps.

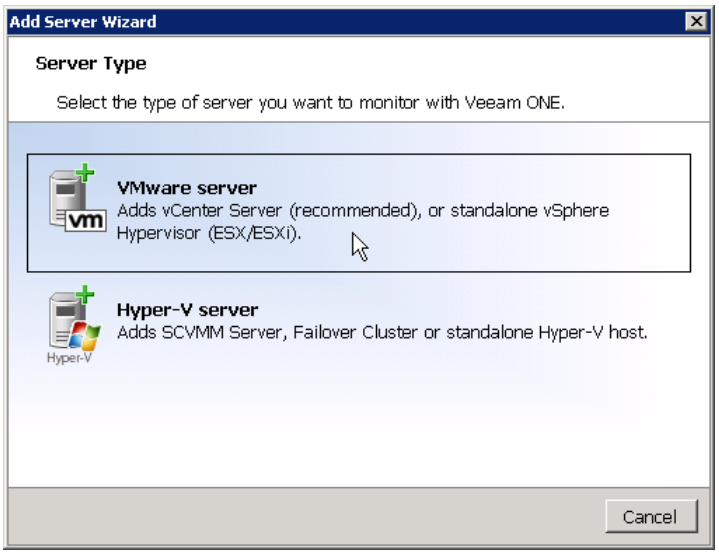
Step 1. Launch the Add Server wizard

To launch the **Add Server** wizard, do one of the following:

- Click the **Add Server** button on the toolbar.
- Press **CTRL+I** on the keyboard.
- Right-click the **Virtual Infrastructure** node in the inventory pane and choose **Add Server**.

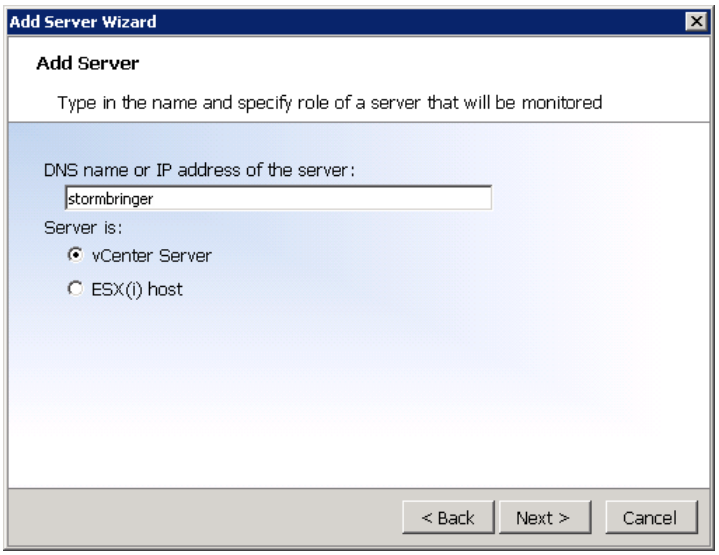
Step 2. Select server type

At the **Server Type** step of the wizard, click **VMware Server**.



Step 3. Specify server name and role

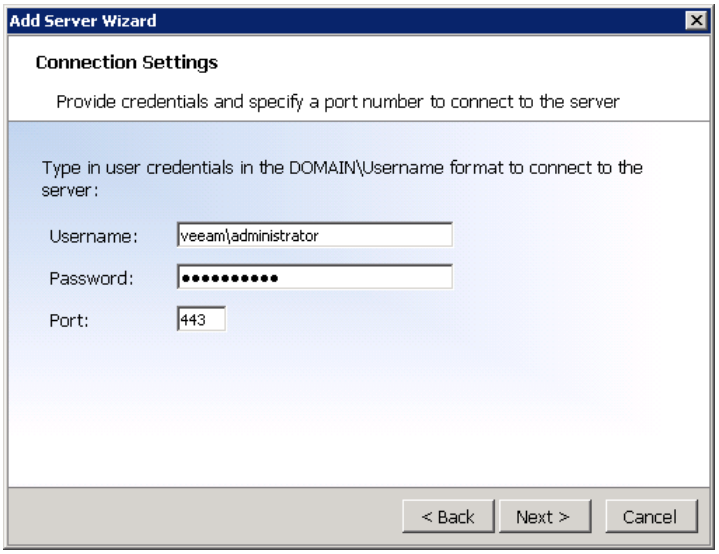
Enter the name or IP address of the virtual server that will be connected to Veeam ONE Monitor. Specify the server role – vCenter Server or a standalone ESX(i) host.



Step 4. Specify credentials

Specify credentials for the user account for connecting to the vCenter Server or ESX(i) host, and a port number. If you are adding a vCenter Server, the user name should be specified in the *DOMAIN\USERNAME* format.

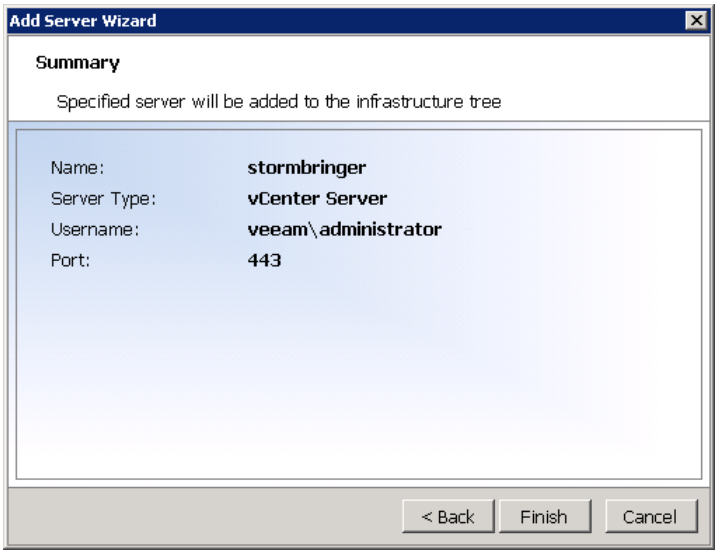
Important! The account used for collecting data from vCenter Server or ESX(i) host must have sufficient permissions on the virtual server. Details on required permissions are available in *Veeam ONE Deployment Guide*.



Step 5. Verify connection settings

Review the connection details and click **Finish** to exit the wizard.

Please note that it may take a while for Veeam ONE Monitor to collect and display the performance data for the newly added ESX(i) host or vCenter Server.



When you first connect a vCenter Server or an ESX host, Veeam ONE Monitor imports available historical performance data (for up to 6 months for vCenter Servers and for the last 24 hours for ESX hosts). If you connect ESXi hosts directly (not as part of a vCenter Server hierarchy), no performance data is imported.

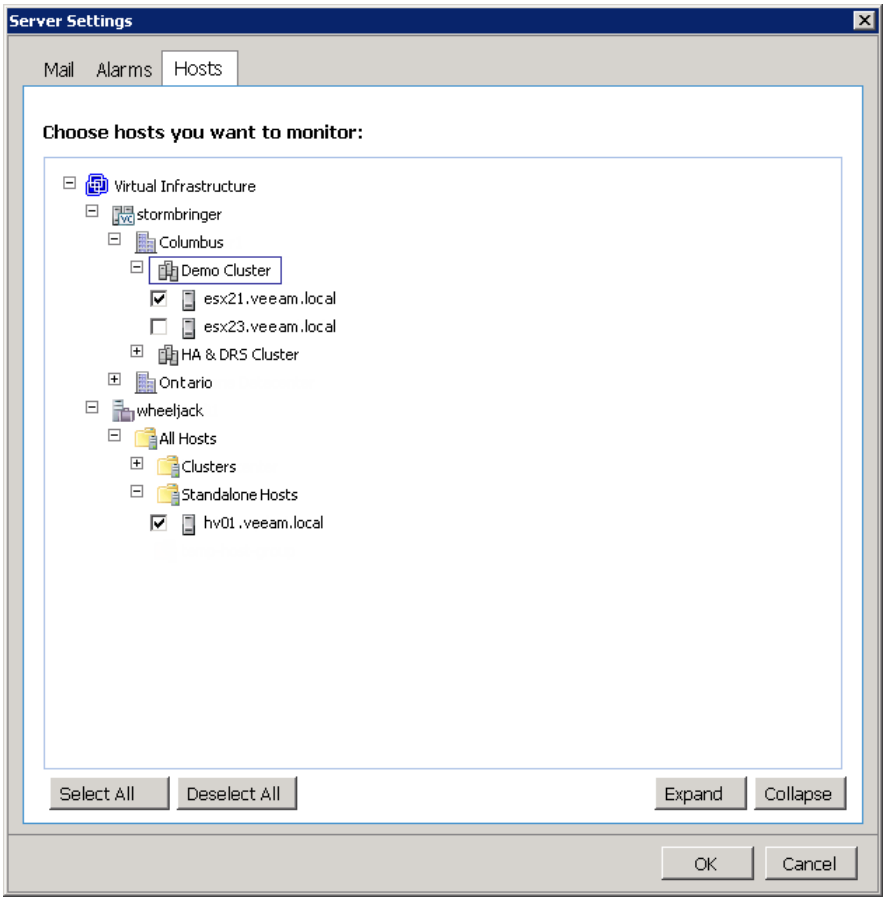
After importing performance data, Veeam ONE Monitor performs incremental data collection in real time.

Selecting Hosts to Monitor

After you connect to a vCenter Server, Veeam ONE Monitor will automatically include in monitoring all hosts managed by this server. However, if you do not need to monitor specific managed hosts, you can exclude such hosts from the monitoring scope. This option may be helpful if the host to which the license is applied does not require monitoring anymore (for example, if it is no longer used).

To select hosts that will be monitored, follow the next steps:

1. Click the **Options** button on the toolbar and select **Server Settings**.
2. In the **Options** window, open the **Hosts** tab.
3. Expand the virtual infrastructure under vCenter Server and clear check boxes next to hosts that should not be monitored.



Changing Connection Settings

To change the connection settings for any of a previously added virtual server, follow the next steps:

1. In the inventory pane, right-click the virtual server and choose **Connection Settings**.
2. Edit the user name, password and/or the port number as necessary.

When a virtual server is disconnected, the previously added VMs will still be displayed in the list. After the object is re-connected, its performance data will be updated. If the connection is not restored, only the history of performance data will be available.

Removing Monitored Objects

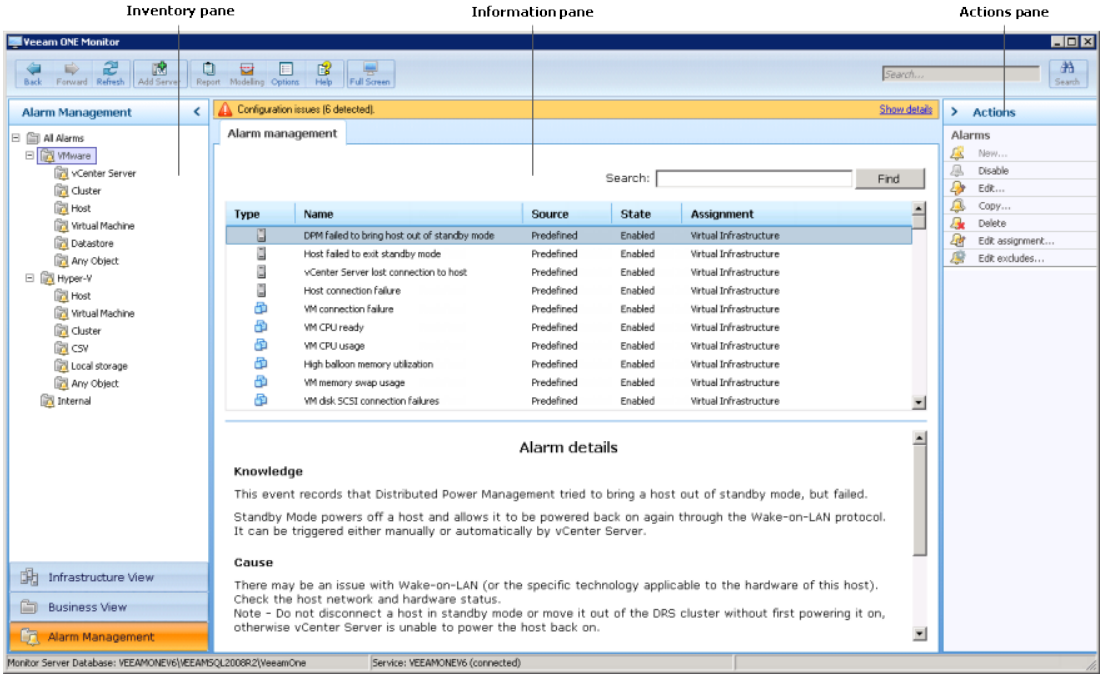
To remove a virtual server connection, follow the next steps:

1. In the inventory pane, right-click the virtual server you want to remove.
2. Select the **Remove vCenter Server** or **Remove Host** command from the shortcut menu.

Managing Alarms

Veeam ONE Monitor comes with a set of predefined alarms, which makes it an out-of-the box solution and allows for its fast deployment. Predefined alarms cover major levels of virtual infrastructure: vCenter Servers, clusters, ESX(i) hosts (hardware, connection state, CPU and memory usage), virtual machines (CPU ready time, CPU and memory usage), datastores and "any objects". Depending on requirements to the virtual environment, you can adjust settings of predefined alarms, and create new alarms that will analyze performance and alert on errors at any level of virtual infrastructure.

To see a list of alarms predefined for a specific level of the virtual infrastructure, to adjust alarm settings and create new alarms, click **Alarm Management** at the bottom of the inventory pane and select the necessary object from the tree.



The **Alarm management** view of Veeam ONE Monitor is divided into three panes – inventory pane, information pane and actions pane.

Inventory pane

The **inventory pane** on the left shows the alarm management tree that includes available alarm types (virtual infrastructure objects to which alarms can be applied and internal Veeam ONE Monitor alarms).

Information pane

The **information pane** contains the list of predefined and custom alarms for the level that is selected in the alarm management tree. Every alarm is described with the following details: type, name, source, state (*Enabled* or *Disabled*) and assignment scope.

The lower section of the information pane displays alarm details – information on the selected alarm, such as summary, cause, resolution and external sources of data.

Actions pane

The **Actions** pane on the right displays a list of links for performing various operations on alarms – creating, editing, deleting, copying alarms, enabling or disabling alarms, changing alarm assignment and alarm excludes.

Creating Alarms

To create a new alarm, perform the following steps.

Step 1. Select the alarm type

Most Veeam ONE Monitor alarms are created for a certain virtual infrastructure level — you can create an alarm that will be applied to vCenter Server, cluster, ESX(i) host, virtual machine, datastore or "any object". The level at which an alarm is set, is specified by the **Type** attribute in the list of alarms.

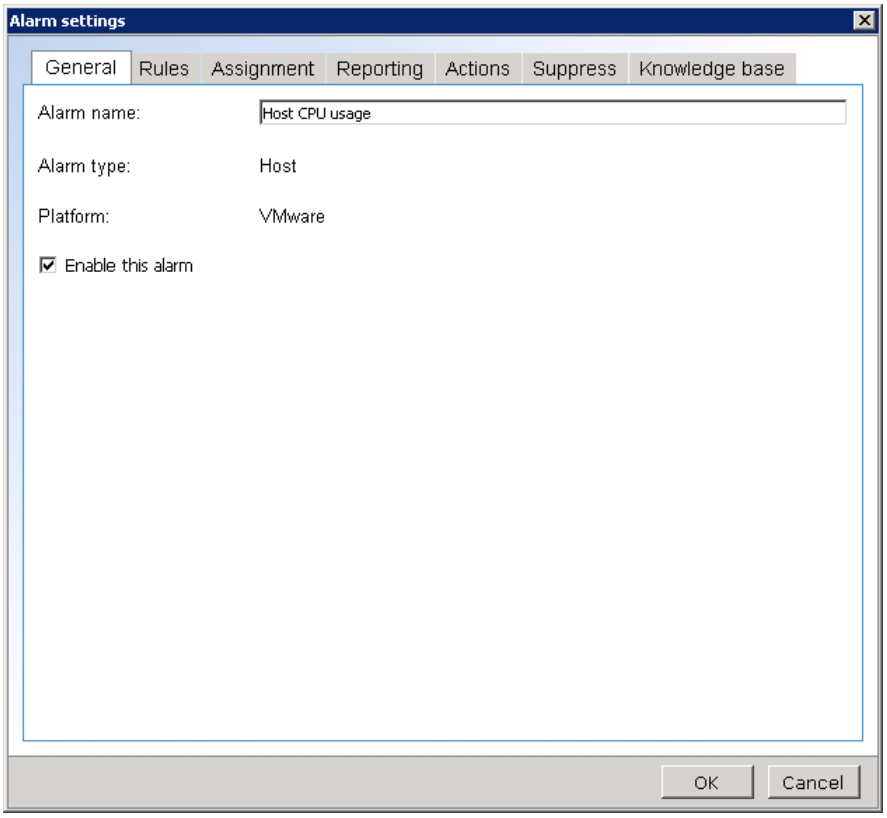
To start working with a new alarm, you need to select its type:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the alarm management tree, select the necessary type of virtual infrastructure object.
3. Click the **New** link in the **Actions** pane on the right.

Step 2. Specify basic alarm details

On the **General** tab of the **Alarm settings** window, enter the name for a new alarm. Note that at this point, the alarm type cannot be changed.

Select the **Enable this alarm** check box if you want to enable the alarm immediately after you save its settings. If the check box is not selected, the alarm settings will be saved, but the alarm will be disabled and will not raise any notifications.

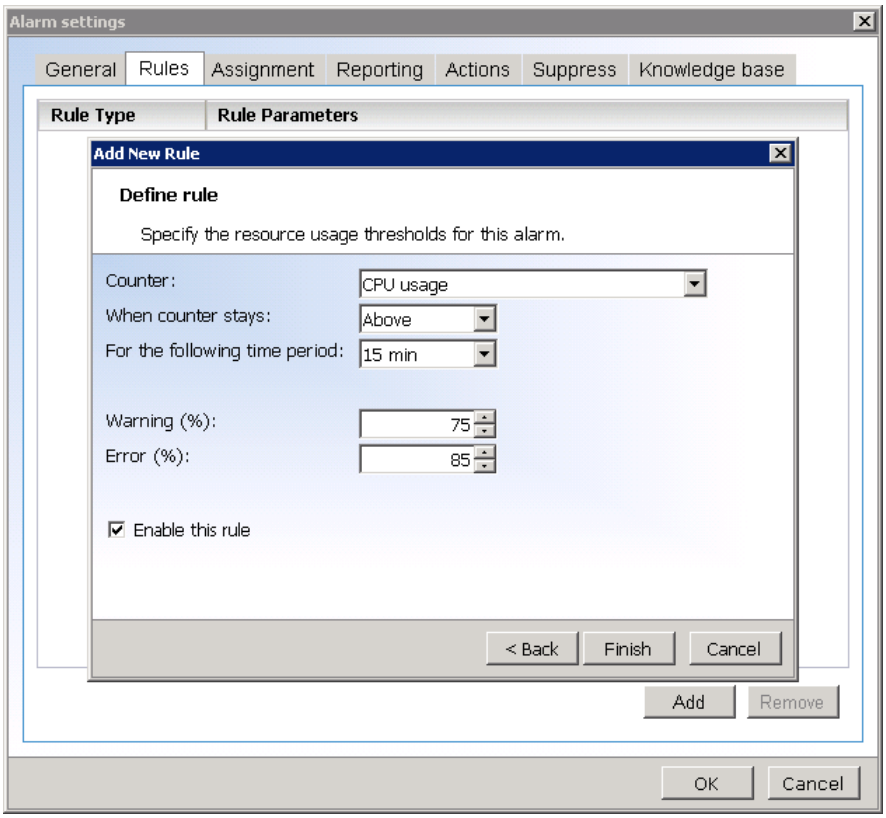


Step 3. Specify alarm rule(s) and severity

On the **Rules** tab of the **Alarm settings** window, specify rules for triggering the alarm.

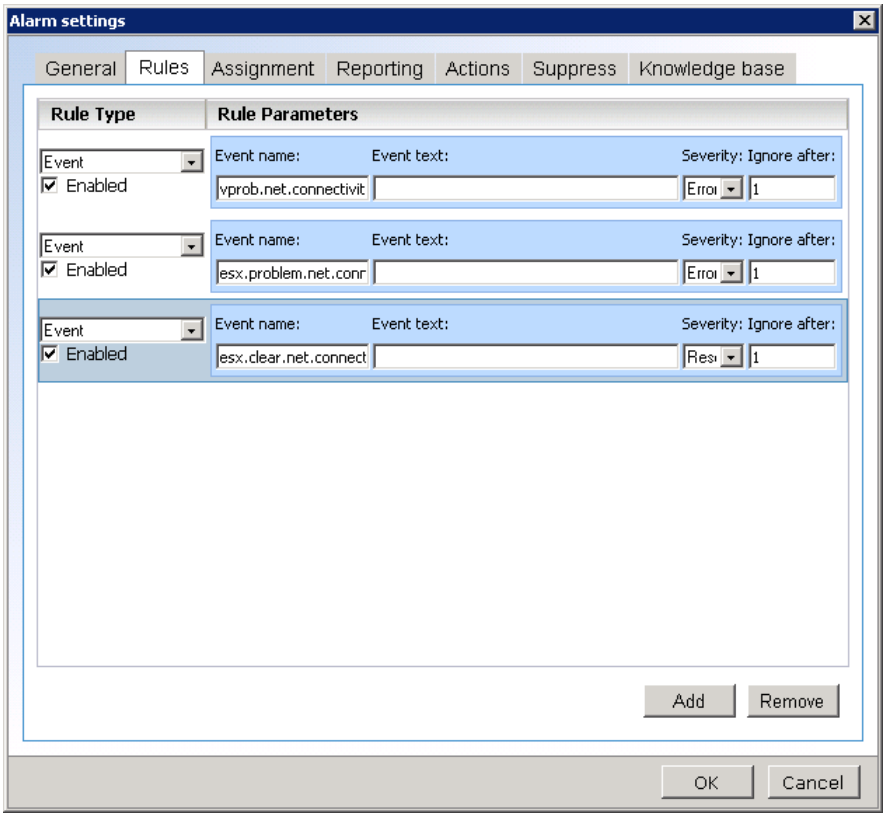
To define alarm rules:

1. Click the **Add** button and select the necessary rule type. Available rule types vary depending on the type of alarm. To learn more about alarm rules, see the Alarm Rules section.
2. Click **Next** and specify conditions (or other information, as applicable) for the alarm rule and the alarm severity.
3. Select the **Enable this rule** check box you want to put the rule in action for the alarm. If the check box is not selected, the rule settings will be saved, but the rule will not be checked against virtual infrastructure objects of the specified type.



4. If you are adding **event-based rules**, you can additionally specify alarm suppression settings. In the **Ignore after** field, enter the number of times the alarm can fire before all further repetitive alarms are suppressed (by default, this value is set to 1).

   For example, an alarm is configured to fire when a host loses its network connection, and the **Ignore after** value is set to 1. If a host loses its network connection, the alarm will fire only once. All further events informing about problems with host network connectivity will be ignored until you resolve the alarm that has already fired.



5. Repeat steps 1-4 for every new rule you want to add.
6. You can create up to 8 rules for one alarm. Note that all alarm rules must be of the same type. That is, you can add either **event-based rules** or **rules for specific conditions or state**. You cannot combine event-based rules and condition rules for the same alarm.

After you have added rules, make sure the **Enabled** check box is selected for all rules that should be used by the new alarm. The alarm will be triggered if any of its enabled rules is true.

Step 4. Specify alarm assignment

On the **Assignment** tab of the **Alarm settings** window, specify virtual infrastructure object(s) to which the alarm should be assigned. Veeam ONE Monitor offers the following options for assigning alarms:

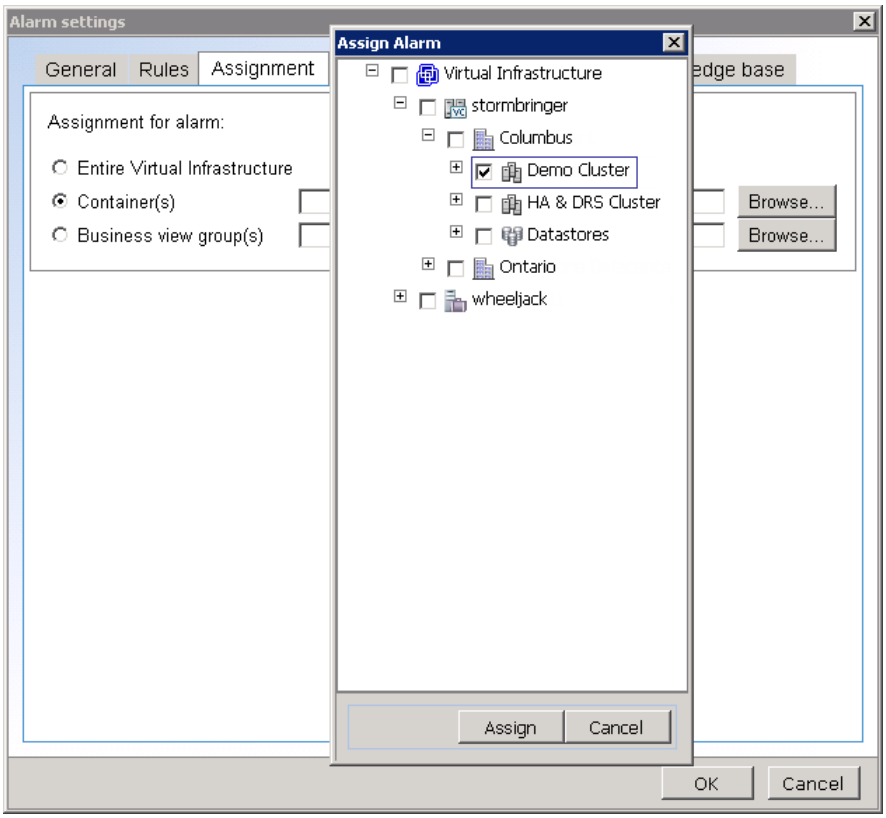
- **Entire Virtual Infrastructure** is the default assignment scope for all new alarms. Select this option if you want to assign the alarm to all virtual infrastructure objects that match the alarm type. For example, if you are working with an alarm of the **Host** type, the alarm will be assigned to all hosts in the monitored virtual environment.
- **Container(s)** are parent instances that include virtual infrastructure objects to which the alarm should be assigned. For example, you can assign an alarm of the **Virtual Machine** type to a specific resource pool, ESX(i) host, cluster, datacenter or vCenter Server. As the result, the alarm will apply to all VMs that belong to the selected container.

  To assign the alarm to one or several containers, select the **Container(s)** option, click the **Browse** button and choose the necessary containers from the virtual infrastructure

hierarchy. If required, you can also select specific objects that match the alarm type (for example, you can assign a **Host** alarm to a specific host rather than to a host container.

- **Business view group(s)** are custom categorization groups that you have previously configured in Veeam ONE Business View. For example, if VMs in your environment are divided into different SLA groups, you can create a set of alarms that correspond to specific service level requirements and assign these alarms to the necessary SLA group.

  To assign the alarm to one or several groups, select the **Business view group(s)** option, click the **Browse** button and choose the necessary groups and objects within these groups from the business view hierarchy.



Note that there are several restrictions for assigning alarms:

- Alarm can be assigned to objects, which correspond to the alarm type. For example, alarm of the **VM** type can be assigned to virtual machines or to a container that includes virtual machines.

  The same applies to Business View groups: the alarm type must match the Business View category type. You cannot assign an alarm of the **Host** type to a Business View group that is used to categorize VMs.

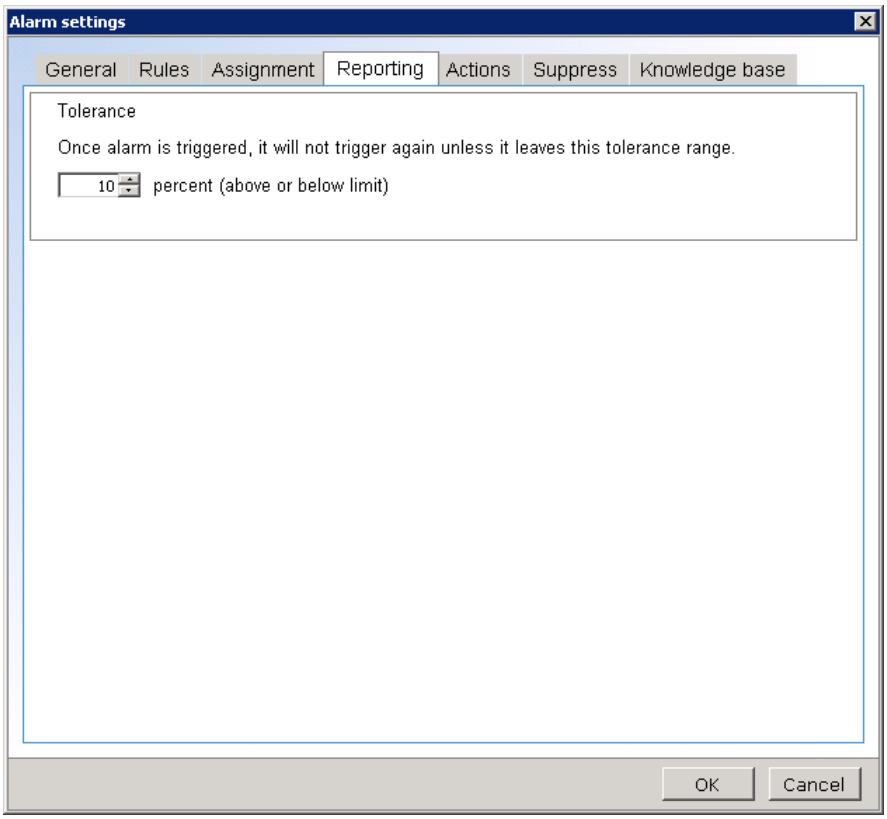
- Alarm of the **Any object** type can be assigned to any objects.

Step 5. Specify alarm reporting settings

On the **Reporting** tab of the **Alarm settings** window, define the alarm tolerance range. Veeam ONE Monitor uses the alarm tolerance value to control whether it is necessary to generate notifications if the alarm severity changes to a lower level – from error to warning and from warning to resolved.

In the **Tolerance** section, specify the acceptable level of deviation from the condition value (in percent). As long as the value of the monitored metric remains in the specified range, a new alarm will not be sent. The alarm tolerance works only for alarms that use total values in alarm rules, such as total CPU or total memory usage.

For example, the alarm is configured to generate an error when host memory usage exceeds 60% and a warning if memory usage exceeds 50%. The tolerance range is set to 10% of the condition value (which is 6% memory usage). When memory usage reaches above 60%, the alarm will trigger an error. If the memory usage drops, the alarm will not generate warnings until host memory usage falls down to 54%.



Step 6. Specify alarm actions

On the **Actions** tab of the **Alarm settings** window, specify what actions should be carried out when the alarm is triggered or when alarm status changes. You can select to notify the virtual infrastructure administrators about the triggered alarm or run a custom script.

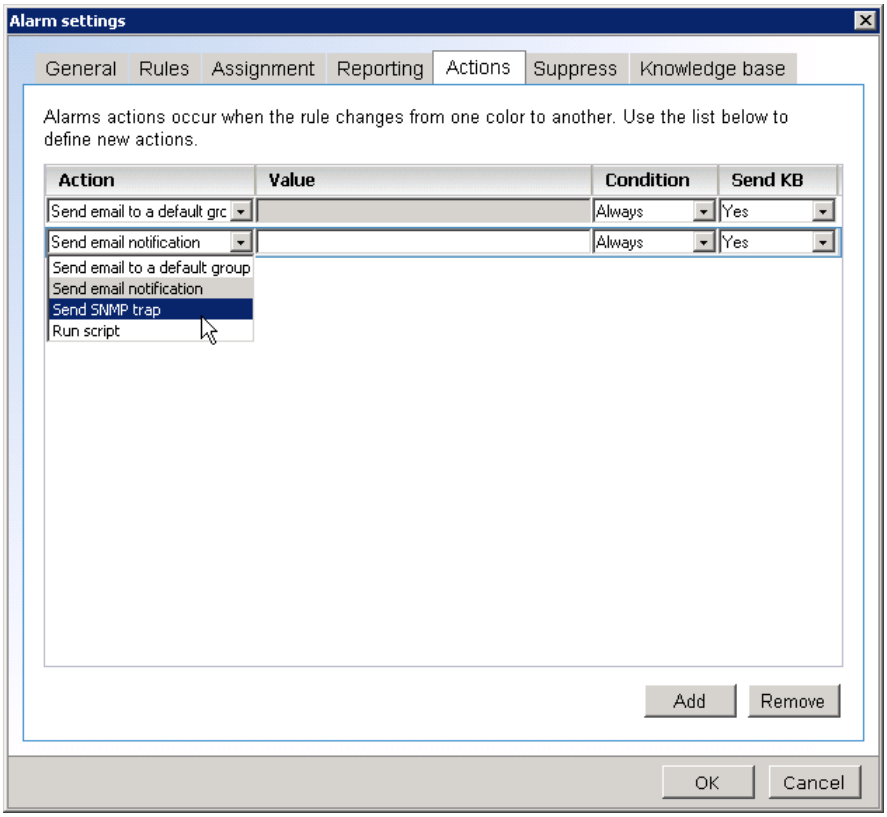
Note that to be able to receive email and trap notifications, you should configure general mail and trap notification settings in the **Server Settings** section of Veeam ONE Monitor. To learn more, see the Mail Settings and Alarms Settings sections, correspondingly.

1. From the **Action** list, select the necessary action:
    - **Send email to a default group** is the default action that applies to all new alarms. Select this option if you want to send an email notification to all recipients included in the **Default email notification group** when the alarm is triggered or when the alarm status changes. The **Default email notification group** is configured in the **Server Settings** section of Veeam ONE Monitor. To learn more, see the Mail Settings section.
    - **Send email notification** – select this option if you want to send an email notification to specific recipients when the alarm is triggered or when the alarm status changes. Enter recipients' email addresses in the **Value** field. If you want to specify several recipients, separate email addresses with semicolons.
    - **Send SNMP trap** – select this option if you want to send an SNMP trap when the alarm is triggered or when the alarm status changes.
    - **Run script** – select this option if you want to run a custom script when the alarm is triggered or when the alarm status changes. In the **Value** field, enter the path to the executable file (please note that the executable file must be located on the

Veeam ONE server). You can use the following parameters in the command line for running the script: *%1* — alarm name; *%2*— fired node name; *%3* — triggering summary; *%4* — time; *%5* — alarm status; *%6* — old alarm status.

2. In the **Condition** field, describe when the action should be performed:
   - **Any state** – select this option if the action should be performed every time when the alarm is triggered or when the alarm status changes.
   - **Errors and warnings** – select this option if the action should be performed every time when the alarm status changes to *Error* or *Warning*.
   - **Errors only** – select this option if the action should be performed every time when the alarm status changes to *Error*.
3. Use the **Send KB** field to specify whether the notification email should include KB details. If you select *Yes*, Veeam ONE Monitor will append a KB article below the alarm details in the email message.

Note KB article will be included in email notifications only if you select HTML as the email format in Veeam ONE Monitor mail settings. If you choose to send notifications as plain text, KB articles email messages will not display KB details.



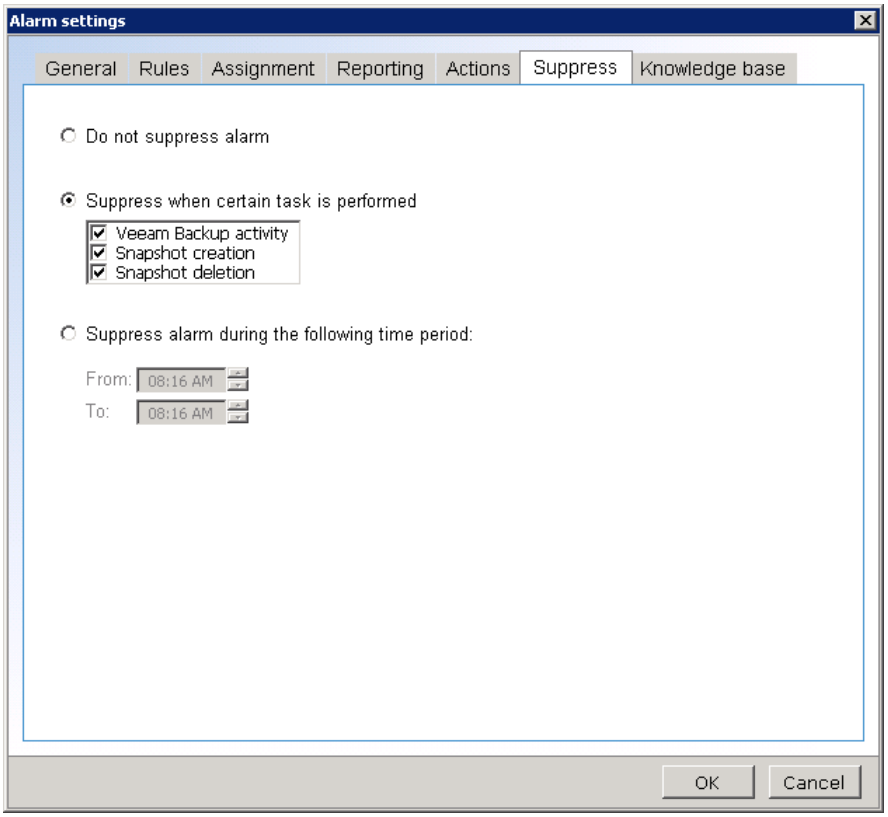
If necessary, you can create multiple actions for the same alarm. To add a new action, click the **Add** button at the bottom and repeat steps 1-3 for every new actions.

Step 7. Configure alarm suppression settings

In some cases it may be necessary to disregard alarms that occur under specific conditions. For example, an alarm triggered when the network usage level is over 70% may be disregarded if it occurred during a scheduled resource consuming operation (such as backup, replication, VM copy or other operations performed with Veeam Backup & Replication). In this situation, you can use the **Suppress** tab.

- If the alarm should be triggered under any conditions, select the **Do not suppress alarm** check box.

- If the alarm should be suppressed when a specific resource-consuming operation is performed, select the **Suppress when certain task is performed** option and choose the necessary types of tasks – Veeam Backup & Replication operations, snapshot creation, snapshot deletion.
- If the alarm should be suppressed during a certain period of the day (for example, if you have scheduled backup operations every night), select the **Suppress alarm during the following time period** option and specify the time interval during which the alarm will be disregarded.

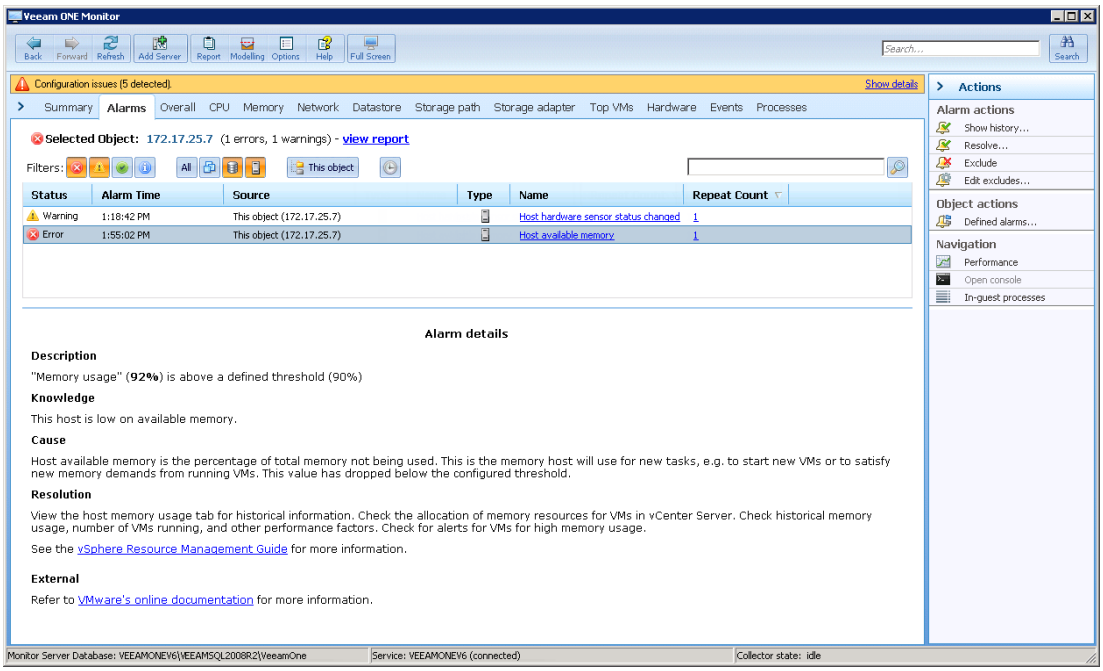


Step 8. Enter alarm details

On the **Knowledge Base** tab, you can enter the alarm details, such as summary, cause and resolution.

In the **External** field, you can provide a link to external resources containing reference information, such as vSphere Resource Management Guide. You can also add comments of instructions for the alarm.

Whenever an alarm is selected in the upper pane of the **Alarm Management** view or the **Alarms** tab of the **Infrastructure View**, these alarm details will be displayed in the lower pane as shown in the illustration below.



Step 9. Save alarm settings

After you finished working with alarm settings, click **OK** to save the alarm.

Editing Alarms

To edit settings of an existing alarm, click **Alarm Management** at the bottom of the inventory pane and do one of the following:

- Double click the necessary alarm in the list.
- Right-click the alarm and select **Edit**.
- Select the alarm in the list and click **Edit** in the **Actions** pane on the right.

Change the alarm settings as described in the Creating Alarms section.

Veeam ONE Monitor also supports batch alarm editing. Note that in the batch editing mode, you can only change alarm **Actions** settings. To modify settings of several alarms at once, select the necessary alarms in the list using the **CRTL** or **SHIFT** keys on the keyboard and do one of the following:

- Right-click the selection and select **Edit**.
- Click **Edit** in the **Actions** pane on the right.

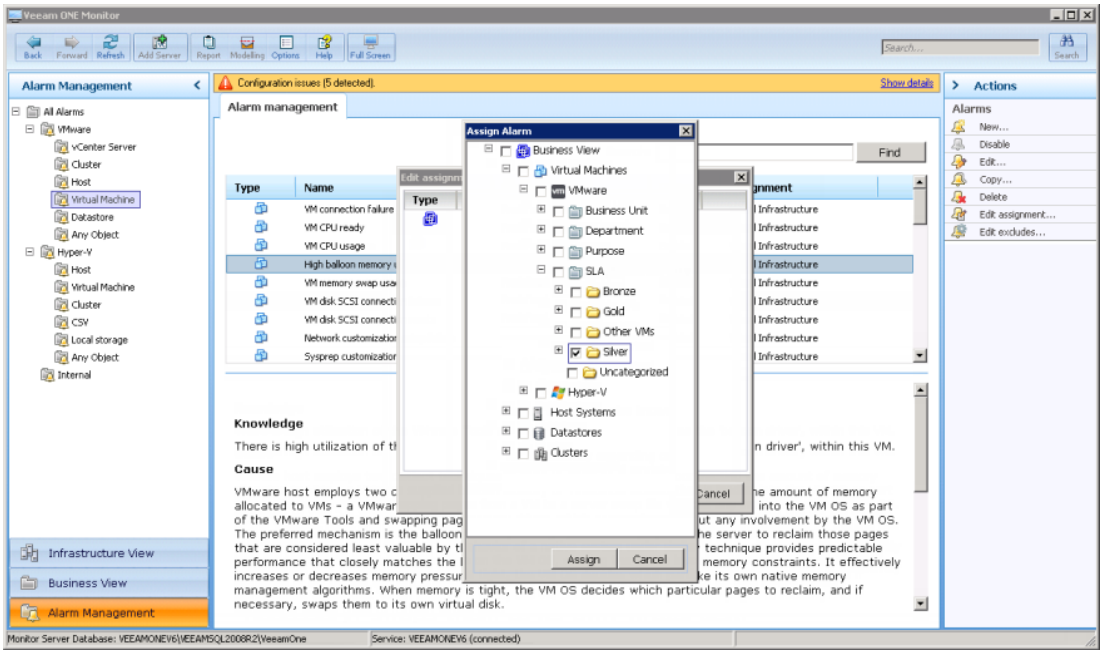
Define the **Actions** settings for selected alarms as described in the Creating Alarms section.

Changing Alarm Assignment

By default, all preconfigured alarms in Veeam ONE Monitor are assigned to the root level of your virtual infrastructure. If necessary, you can change the assignment scope of any existing alarm:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the alarm management tree, select the necessary type of virtual infrastructure object.
3. In the details pane, select the necessary alarm. Use the **CTRL** and **SHIFT** keys on the keyboard to select multiple alarms.
4. Right-click the selection and select **Edit assignment** from the shortcut menu or click **Edit assignment** in the **Actions** pane on the right.
5. In the **Edit assignment** window, remove the current alarm assignment – select the existing assignment rules and click **Remove**.
6. Click the **Add** button and select one of the following options:
   - **Infrastructure tree** – choose this option if you want to assign selected alarms to a certain level of your virtual infrastructure.

     You can select specific objects that match the alarm type or choose containers from the virtual infrastructure hierarchy. For example, you can assign an alarm of the **Virtual Machine** type to a specific VM, resource pool, ESX(i) host, cluster, datacenter or vCenter Server.
   - **Business View** –choose this option if you want to assign selected alarms to custom categorization groups that you have previously configured in Veeam ONE Business View. For example, if VMs in your environment are divided into different SLA groups, you can create a set of alarms that correspond to specific service level requirements and assign these alarms to the necessary SLA group.
7. Repeat step 6 for all virtual infrastructure objects or categorization groups to which the alarm should be assigned. You can combine multiple assignment rules – for example, you can assign an alarm to a Business View categorization group and to a specific level of your virtual infrastructure at the same time.



Note that there are several restrictions for assigning alarms:

- Alarm can be assigned to objects, which correspond to the alarm type. For example, alarm of the **VM** type can be assigned to virtual machines or to a container that includes virtual machines.

The same applies to Business View groups: the alarm type must match the Business View category type. You cannot assign an alarm of the **Host** type to a Business View group that is used to categorize VMs.

- Alarm of the **Any object** type can be assigned to any objects.

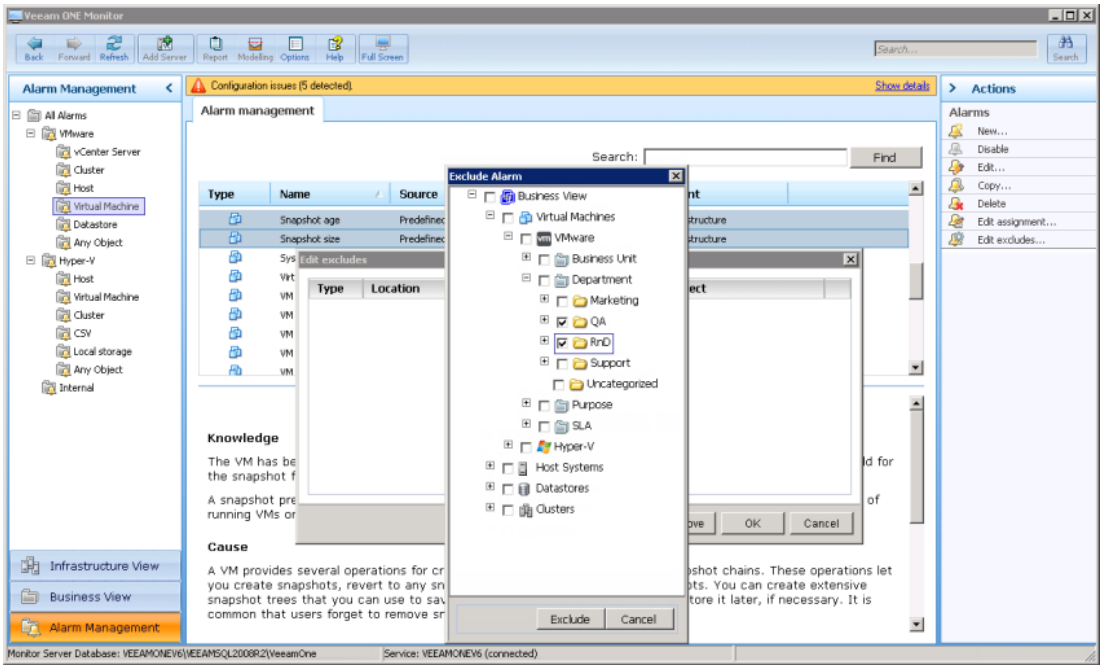
Excluding Objects from Alarm Assignment

If you assigned an alarm to a container, the alarm will work for all of the child nodes and cannot be unassigned from separate child objects. However, you can exclude certain objects from the alarm assignment scope.

To exclude certain child objects for an alarm:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the details pane, select the necessary alarm. Use the **CTRL** and **SHIFT** keys on the keyboard to select multiple alarms.
3. Right-click the selection and select **Edit excludes** from the shortcut menu or click **Edit excludes** in the **Actions** pane on the right.
4. In the **Edit excludes** window, click the **Add** button and select one of the following options:
    - **Infrastructure tree** – choose this option if you want to select objects from the virtual infrastructure hierarchy.

      You can select specific objects that match the alarm type or choose parent objects (containers) from the virtual infrastructure hierarchy. For example, if you work with the alarm of the **Virtual Machine** type, you can exclude a specific VM, resource pool, ESX(i) host, cluster, datacenter or vCenter Server.
    - **Business View** –choose this option if you want to exclude custom categorization groups that you have previously configured in Veeam ONE Business View or objects from these groups. For example, if you do not want to monitor performance metrics for VMs that belong to the *QA* and *RnD* departments, you can group VMs by department in Veeam ONE Business View and then exclude *QA* and *RnD* VMs from alarm assignment scope in Veeam ONE Monitor.
5. Repeat step 5 for all virtual infrastructure objects or categorization groups you want to exclude.



Note When you exclude an object from an alarm, all unresolved *Warning* or *Error* notifications that were triggered by this alarm for the object will change their status to *Resolved*.

Copying Alarms

Instead of creating new alarms from scratch, you can create a copy of an existing alarm and edit its settings. An alarm copy keeps the same settings as the original alarm, except alarm assignment – initially, an alarm copy is not assigned to any virtual infrastructure objects or Business View groups.

To create an alarm copy, follow the next steps:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the details pane, select the necessary alarm. Use the **CTRL** and **SHIFT** keys on the keyboard to select multiple alarms.
3. Right-click the selection and choose **Copy** from the shortcut menu or click **Copy** in the **Actions** pane on the right. Veeam ONE Monitor uses the following pattern to name alarm copies: "*Copy of <alarm name>*".
4. Change alarm settings and alarm assignment as described in the Creating Alarms section.

Enabling and Disabling Alarms

To enable inactivated alarms, follow the next steps:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the details pane, select the necessary disabled alarm. Use the **CTRL** and **SHIFT** keys on the keyboard to select multiple alarms.
3. Right-click the selection and choose **Enable** from the shortcut menu or click **Enable** in the **Actions** pane on the right.
4. Click **Yes** in the dialog box to confirm enabling.

To disable activated alarms, follow the next steps:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the details pane, select the necessary alarm. Use the **CTRL** and **SHIFT** keys on the keyboard to select multiple alarms.
3. Right-click the selection and choose **Disable** from the shortcut menu or click **Disable** in the **Actions** pane on the right.
4. Click **Yes** in the dialog box to confirm disabling.

Note After you disable an alarm, all unresolved *Warning* or *Error* notifications that were triggered by this alarm will change their status to *Resolved*.

Deleting Alarms

To delete an alarm you no longer need, follow the next steps:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the details pane, select the necessary alarm. Use the **CTRL** and **SHIFT** keys on the keyboard to select multiple alarms.
3. Right-click the selection and choose **Delete** from the shortcut menu or click **Delete** in the **Actions** pane on the right.
4. Click **Yes** in the dialog box to confirm deletion.

Note Even if you delete an alarm in the **Alarm Management** section, Veeam ONE Monitor will retain its history – all fired alarms and alarm status changes will be available on the **Alarms** monitoring dashboard.

Modelling Alarm Number

When specifying alarms settings, it may be useful to forecast the number of alarms that will be sent within a specific period of time. This option helps you to estimate how many alarms the user will receive according to the existing alarms settings.

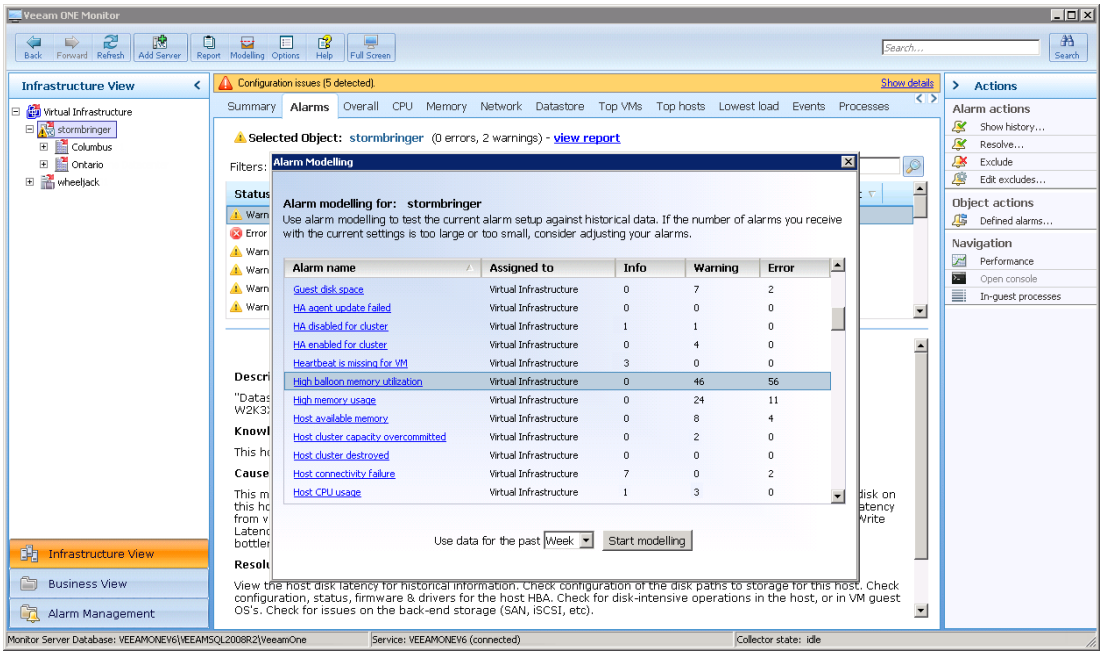
To model the alarms number, Veeam ONE Monitor applies the current alarms settings to the history data, thus receiving an approximate number of alarms to be sent. Taking into consideration the modeled number of alarms, you may adjust alarms settings — for example, if the number is too great, change the alarm tolerance or adjust rule conditions. This will help avoid receiving non-significant alarms and missing important alerts.

To forecast the number of alarms to be sent:

1. Switch to the **Infrastructure View**.
2. In the inventory pane, select an object for which you want to perform analysis and click the **Modelling** button on the toolbar.

   Alternatively, you can right-click the necessary object and select **Alarms > Modelling** from the shortcut menu.
3. In the **Alarm Modelling** window, specify the time period for which you want the analysis to be made: Week, Month or Year.
4. Click the **Start Modelling** button.

Veeam ONE Monitor will display the number of alarms of different severity that will be sent within the selected period of time.



Exporting and Importing Alarms

Veeam ONE Monitor allows you to export alarms to an XML file and import alarms from an XML file. The export and import possibilities can be useful if you need to back up you alarm settings, or if you want to copy alarm settings from one Veeam ONE Monitor server to another.

To export alarms, follow the next steps:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the alarm management tree, select the type of virtual infrastructure object for which you want to export alarms.
3. Right-click the object and choose **Alarms > Export Alarms** from the shortcut menu.
4. Save the XML file with alarm settings.

To import alarms from an XML file, follow the next steps:

1. Click **Alarm Management** at the bottom of the inventory pane.
2. In the alarm management tree, right-click any object and choose **Alarms > Import Alarms** from the shortcut menu.
3. Specify path to an XML file with alarm settings.

When importing alarms from an XML file, Veeam ONE Monitor can create new alarms or update alarms that you already have.

- If an alarm in the XML file matches any existing Veeam ONE Monitor alarm by name, Veeam ONE Monitor will suggest you to update settings of an existing alarm with data from the XML file. You can either replace an existing alarm with the alarm from the XML file, or leave the existing alarm without any changes.
- If an alarm in the XML file does not match any existing alarm by name, Veeam ONE will create a new alarm.

Configuring Veeam ONE Monitor Settings

Veeam ONE Monitor allows customizing settings of Veeam ONE Monitor Client and Veeam ONE Monitor Server components. This section provides a detailed description about all settings that can be adjusted.

Adjusting Veeam ONE Monitor Client Settings

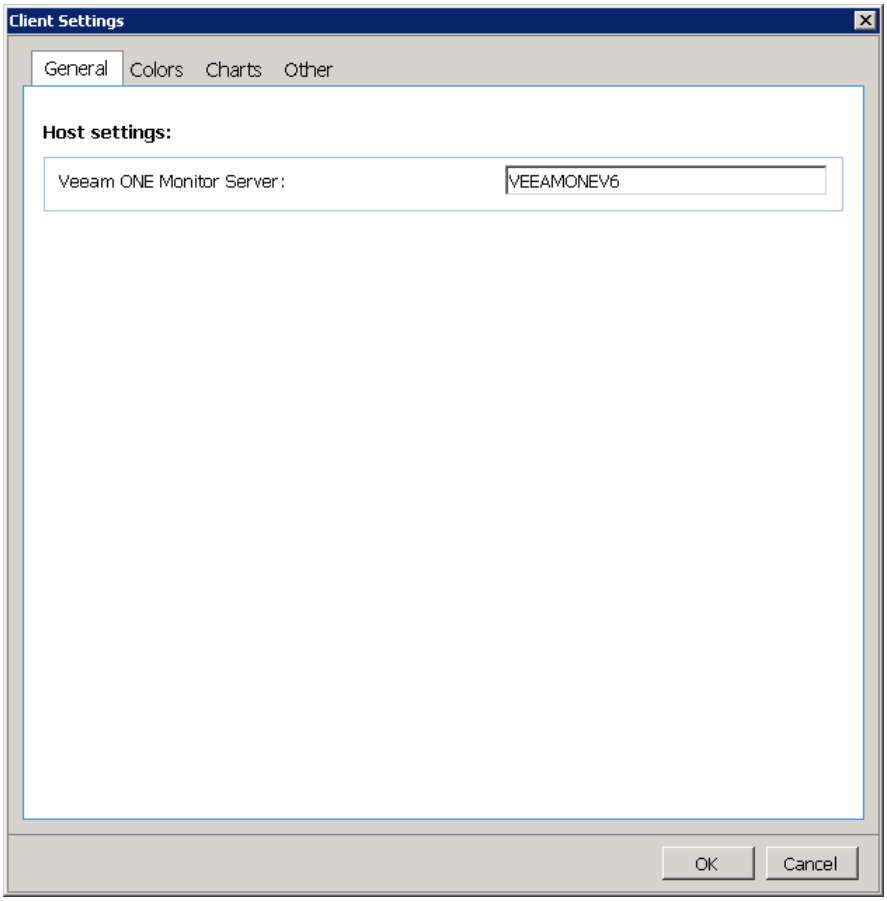
The Veeam ONE Monitor Client settings allow you specify custom user preferences: select a machine to be used as Veeam ONE Monitor Server, specify display preferences and custom colors for performance charts and other.

To adjust the Veeam ONE Monitor Client settings, click the **Options** button on the toolbar and select **Client Settings**. Alternatively, you can press **CTRL+O** on the keyboard.

General Settings

The **General** tab of the **Client Settings** window contains the name of a machine where the Veeam ONE Monitor Server component is installed. Alternatively, you can right-click the **Virtual Infrastructure** node in the inventory pane and select **Connect to another server** from the shortcut menu.

- If you are using a typical Veeam ONE installation, the **Veeam ONE Monitor Server** field will be populated automatically with the Veeam ONE machine name.
- If you are using an advanced Veeam ONE installation or if you have installed an additional instance of Veeam ONE Monitor Client on a separate computer, then the first time you open the Veeam ONE Monitor console, you will be requested for the name of the Veeam ONE Monitor Server machine. Enter the name of the machine where the Veeam ONE Monitor Server component is installed in the **Veeam ONE Monitor Server** field.



Color Settings

The **Colors** tab of the **Client Settings** window allows you to create a custom color scheme that will be used to display graphs in performance charts. You can add colors from the standard color palette, remove and edit existing colors, as well as sort them as required (the upper colors are used first).

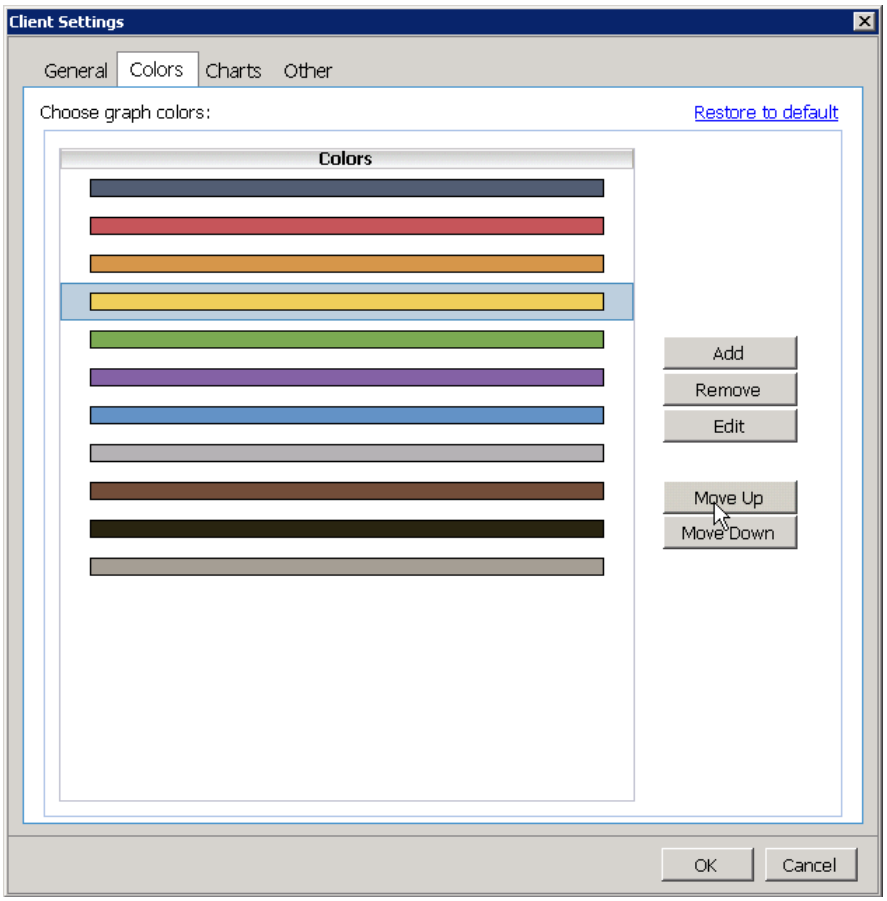
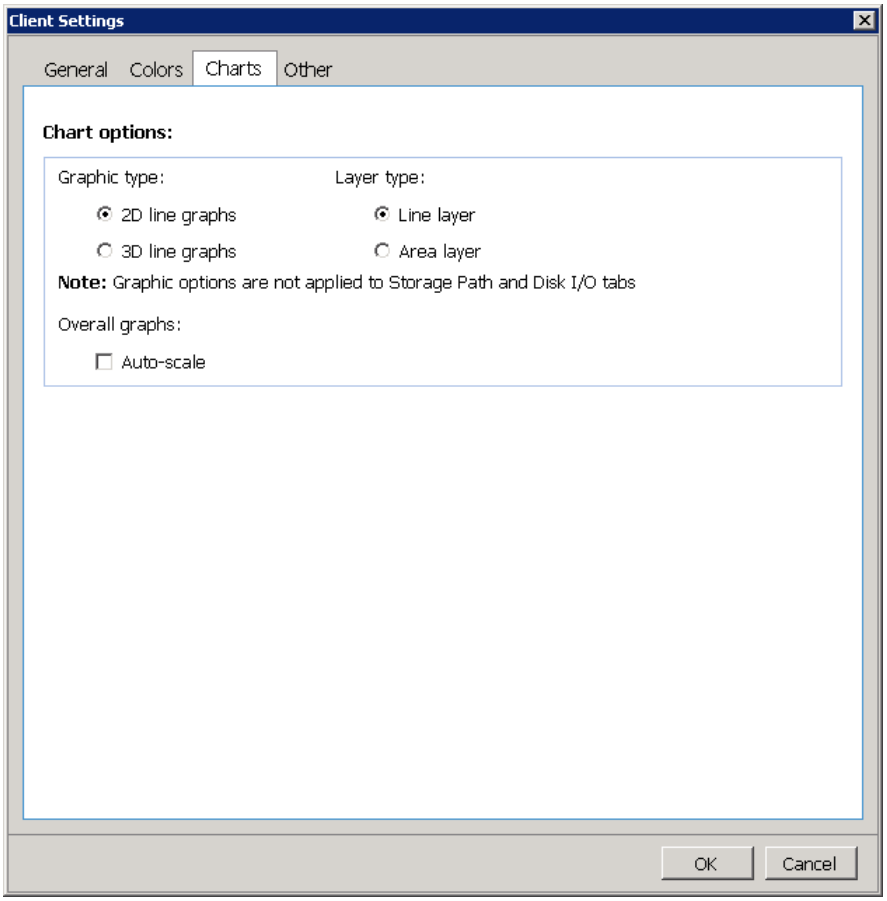


Chart Settings

The **Chart** tab of the **Client Settings** window allows you to customize display preferences for performance graphs such as graphic type (2D or 3D), layer type (lines or filled areas).

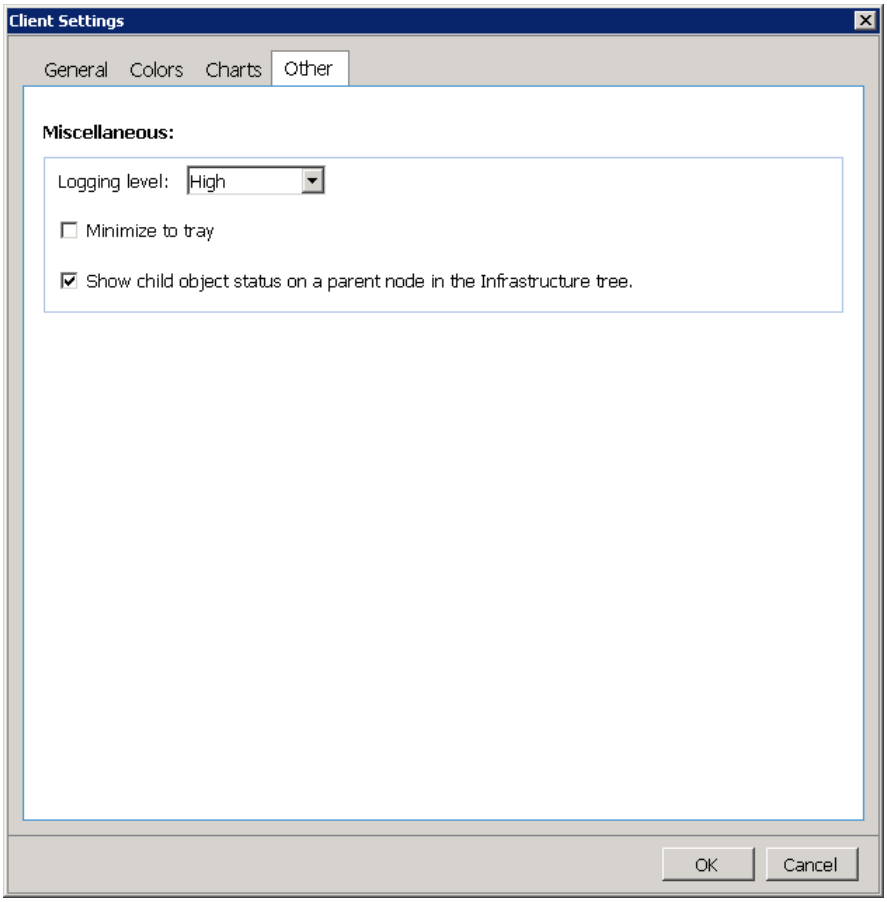
You can also enable auto-scaling if you want to remove top lines from performance charts on the **Overall** tab. In this case, the Y-axis will scale automatically, to match the range of the displayed data.



Other Settings

The **Other** tab of the **Client Settings** window allows selecting additional application options. You can change the level of logging (*Off*, *Low* or *High*) and choose to hide Veeam ONE Monitor to a system tray icon whenever the Veeam ONE Monitor window is minimized.

You can also choose not to show the child object status on a parent node in the Infrastructure tree. In this case, every object in the Virtual Infrastructure tree will reflect its own state only; the state of child objects will not be reflected.



Adjusting Veeam ONE Monitor Server Settings

Veeam ONE Monitor server settings allow you to customize application settings: configure mail and trap notification settings and select hosts to be monitored.

To adjust the server settings, click the **Options** button on the toolbar and select **Server Settings**. Alternatively, you can press **CTRL+S** on the keyboard.

Mail Settings

The **Mail** tab of the **Server Settings** window allows you to configure mail settings that will be used for sending alarm notifications by email.

In the **Email settings** section, specify the following details:

- In the **SMTP server** field, enter the DNS name or IP address of the SMTP server that will be used for sending email messages. Change the SMTP communication port if needed. All Veeam ONE Monitor email notifications (including test messages) will be sent by this SMTP server.
- In the **From** field, enter the email address of the notifications sender.
- If your SMTP server requires SMTP authentication, select the **Use authentication** check box and specify authentication credentials: login and password.

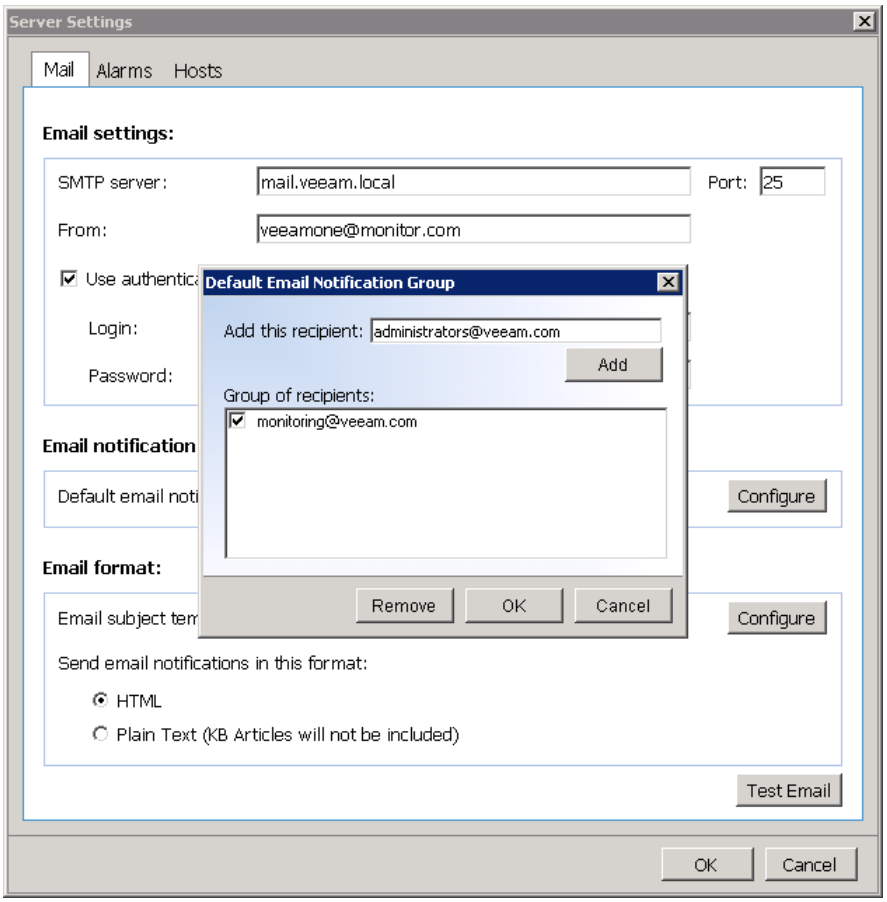
- Select **Enable SSL security** if necessary.

In the **Email notification settings** section, specify email addresses that will be included into the default email notification group. The default notification group allows you to simplify the process of configuring alert notification settings. Instead of entering email addresses manually for every alert, you can create a group of recipients (for example, monitoring operators) and notify the whole group when the alert is fired or when the alert changes its status.

To add an email address to the default notification group, click the **Configure** button, type the email address in the **Add this recipient** field and click **Add**. To remove a recipient from the default notification group, select an email address in the **Group of recipients** list and click **Remove**.

If necessary, you can temporarily disable notifying specific recipients in the group. To do so, clear check boxes next to their email addresses in the **Group of recipients** field.

Important! By default, all predefined alarms are configured to notify members of the default notification group whenever an alarm is triggered or whenever an alarm changes its status. To learn how to change alarm settings, see section Creating Alarms > Step 6.



In the **Email format** section, specify settings for email notification templates:

- Click the **Configure** button if you want to change the subject of the notification email. The default subject includes details on the alarm name, name of the affected virtual infrastructure object and alarm status change.

  You can use the following parameters in the notification subject: *%ALARM_NAME%* - name of the alarm, *%TIME%* - date and time when the alarm was fired, *%STATUS%*- current alarm status, *%OLD_STATUS%* - status of the alarm before the alarm was fired, *%OBJECT%* - affected virtual infrastructure object, *%OBJECT_TYPE%* - type of the affected virtual infrastructure object.

- In the **Send email notifications in this format** section, select an email format – HTML or plain text. Note that if you select to send email notifications as plain text, you will not be

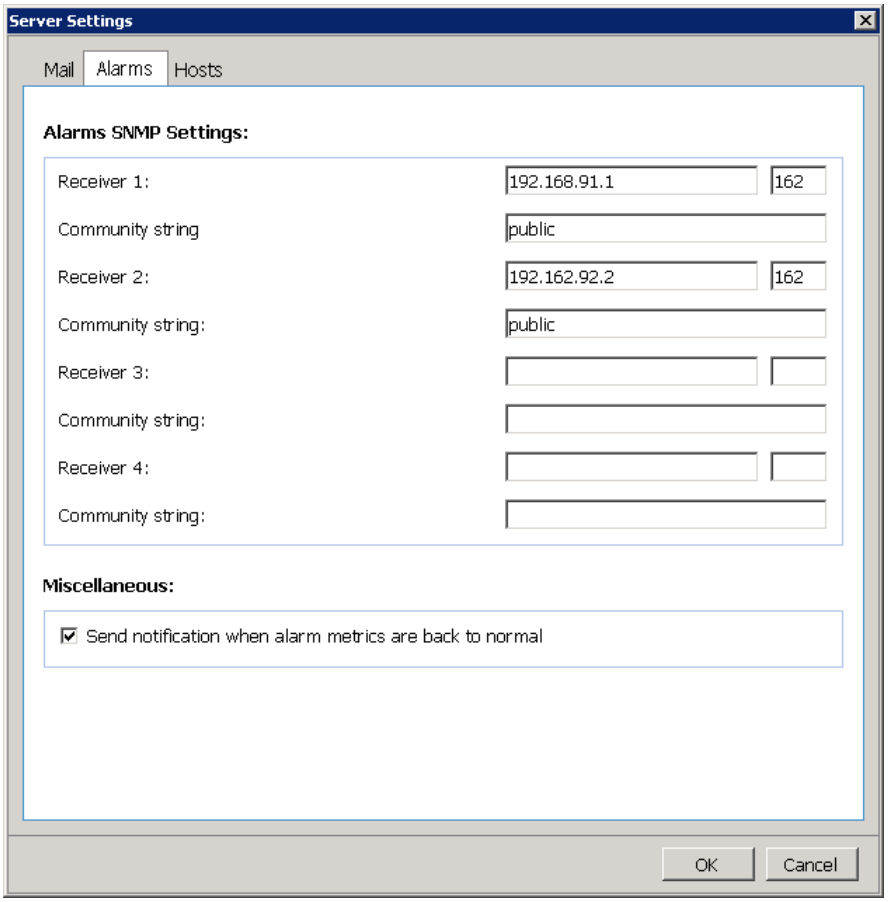
able to append KB articles to alarm details. For more information, see section Creating Alarms > Step 6.

To test if email settings have been configured correctly, click the **Test Email** button, enter the email address to which a notification should be sent, and Veeam ONE Monitor will send a test email to the specified address.

Alarms Settings

The **Alarms** tab of the **Server Settings** window allows you to specify trap notification settings that can be used for sending notifications about alarms. You can send trap notifications to 4 different destinations.

1. In the **Receiver#** field, specify the DNS name or IP address of the SNMP recipient.
2. In the field on the right, enter the port number to be used. In the **Community String** field, enter the community identifier.



Next, you should configure SNMP service properties on the trap recipients' computers:

1. Install a standard Microsoft SNMP agent from the Windows distribution.
2. From the Start menu, select **Control Panel > Administrative Tools > Services**.
3. Double-click **SNMP Service** to open the **SNMP Service Properties** window.
4. Click the **Traps** tab.
5. Add the public string to the **Community name** list and a necessary host name – to the **Trap destinations** list.
6. Click the **Security** tab.
7. Make sure the **Send authentication trap** option is selected.
8. Add the public string to the **Accepted community names** list.

9. Select the **Accept SNMP packets from any hosts** option.
10. Click **Apply** and then **OK** to accept changes.

The check box in the **Miscellaneous** section of the **Alarms** tab allows you to control whether you want to send notifications when alarm metrics which triggered the alarm return back to normal.

Hosts Settings

The **Hosts** tab of the **Server Settings** window allows you to select hosts that need to be monitored. For more details, see the Selecting Hosts to Monitor section.

Managing License

When installing Veeam ONE, you will be asked to provide a license file. If you provide a full or trial license, you will work with a licensable Veeam ONE version featuring full application functionality. If you do not provide a license, you will work with Veeam ONE free version featuring limited application functionality. For more details on free version limitations, check the Veeam ONE product webpage. You can install a license file and switch to the licensable mode at any time after Veeam ONE installation.

To view information on the currently installed license, select **Help > License Information** from the main menu. To update an existing license or install a license, click **Install License** and browse to the necessary **.lic** file. The license file you provide will be propagated to other Veeam ONE components, so that you do not need to repeat the procedure for every component individually.

MONITORING VIRTUAL ENVIRONMENT

Veeam ONE Monitor a vast variety of tools for monitoring your virtual environment at any perspective and with any level of details.

1. **Monitor overall state of the virtual environment**.

   Start with Summary dashboards to check the overall health and reveal hotspots in your virtual environment. You can quickly review the state of virtual infrastructure components, see the latest alarms, detect the most problematic objects and drill down to the alarm sources for further investigation.

   Use the Top Load and Lowest Load dashboards to pinpoint the weakest and the healthiest components in your environment. You can detect what virtual infrastructure objects are consuming the most and the least amount of CPU, memory, disk, network, and swap resources, or select additional counters to monitor consumers in other areas.

2. **View triggered alarms**.

   Switch to the Alarms dashboard to see details on breached thresholds, events and problems that occurred in your virtual environment. Use the **Actions** pane on the alarms dashboard to detect root causes – drill down to performance charts, open VM console or view the list of in-guest processes.

3. **Work with performance charts and lists of events**.

   Drill down to performance charts to diagnose performance problems. You can change predefined views, quickly switch between charts and view the list of events to get all-round statistics.

4. **Get an in-guest insight**.

   Access the VM console or view the list of in-guest processes to diagnose problems that are related to a specific service, module or application.

5. **Generate reports**.

   Create performance, infrastructure and other reports for key metrics across real-time and historical data.

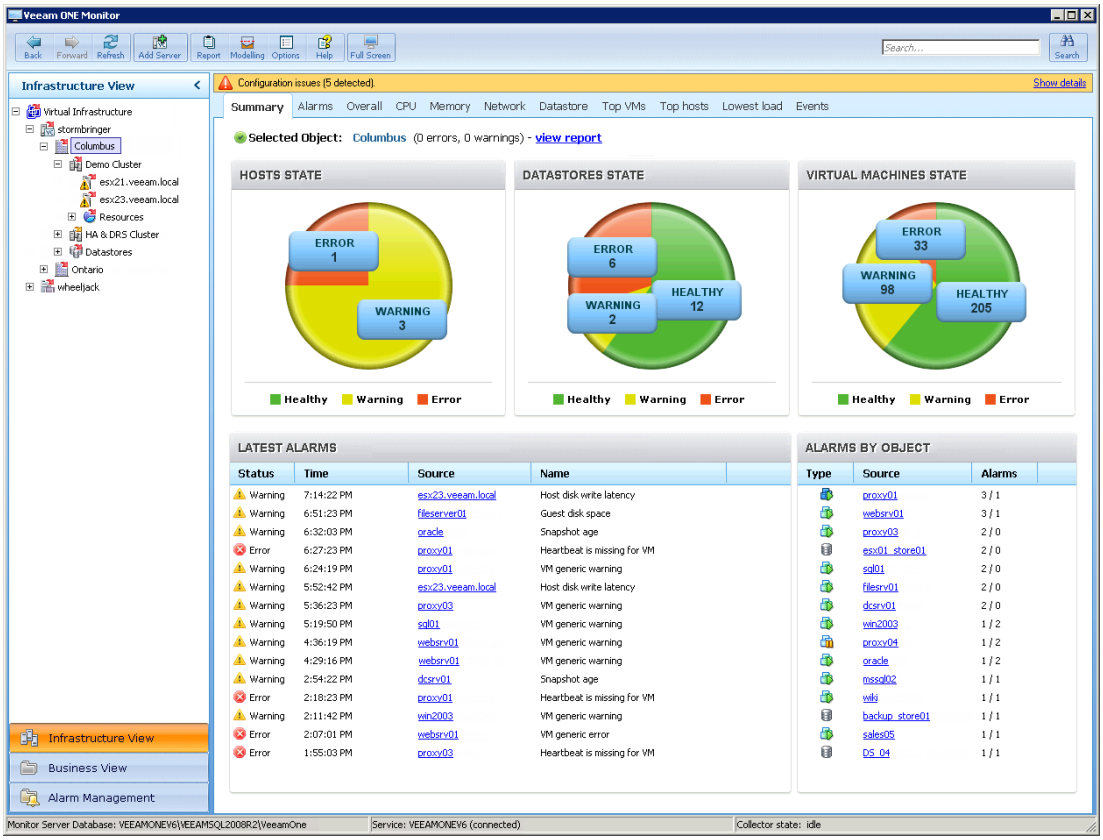
Viewing Summary State

The **Summary** dashboard is the start-off monitoring point in the Veeam ONE Monitor console. It reflects the aggregate health state for all components at a specific level of your virtual infrastructure, or shows summary details for a selected virtual infrastructure object.

To view summary details for a specific virtual infrastructure level, select the necessary object in the inventory pane on the left and open the **Summary** tab. Information presented on the dashboard depends on the type of virtual infrastructure object.

Virtual Infrastructure Summary

If you select the *Virtual Infrastructure* node or a virtual infrastructure container (such as folder, resource pool, host cluster, datacenter, vCenter Server) in the inventory pane, the **Summary** dashboard will present the high-level overview for the state of selected virtual infrastructure level.



- The **Host State**, **Datastores State** and **Virtual Machines State** charts reflect the summary health state of virtual infrastructure objects. Every colored segment represents the number of objects in a certain state – healthy objects, objects with warnings and objects with errors.

  Click the problematic chart to drill-down to additional details and investigate the state of virtual infrastructure objects. Veeam ONE Monitor will open the list of alarms for the selected level of your virtual infrastructure.

- The **Latest Alarms** list displays the latest 15 alarms at the selected virtual infrastructure level. The section presents a summary on the most recent problems that occurred. Click the link in the **Source** column to drill-down to the list of alarms related to a specific virtual infrastructure object.

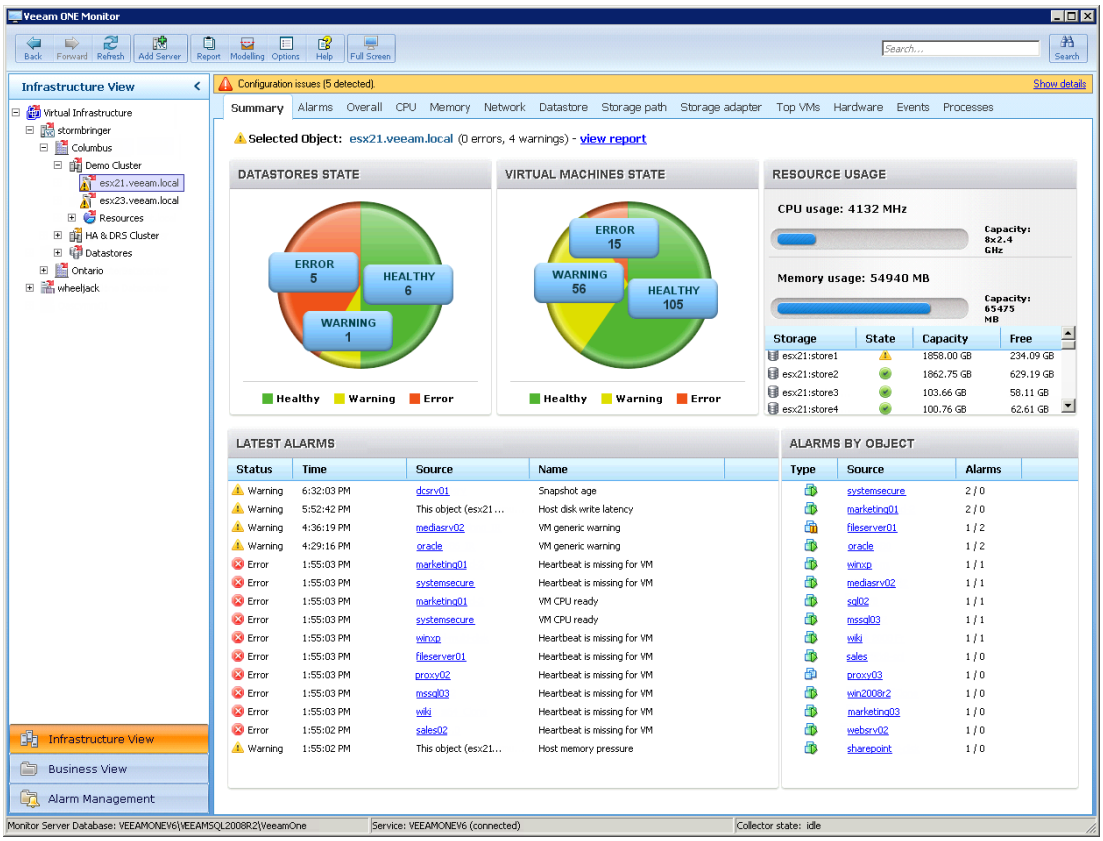
- The **Alarms by Object** list displays 15 objects with the greatest number of alarms. The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 errors and 1 warning related to the object.

  The section gives an overview of the most problematic virtual infrastructure objects at the selected virtual infrastructure level. Click the link in the **Source** column to drill-down to the list of alarms related to a specific object.

For details on working with alarms, refer to the Monitoring Alarms section.

ESX(i) Host Summary

The host **Summary** dashboard provides a high-level overview of the health state and performance for the ESX(i) host and its child objects.



- The **Datastores State** and **Virtual Machines State** charts reflect the summary health state of datastores connected to the host and VMs running on the host. Every colored segment represents the number of objects in a certain state – healthy objects, objects with warnings and objects with errors.

  Click the problematic chart to drill-down to additional details and investigate the state of virtual infrastructure objects. Veeam ONE Monitor will open the list of alarms for the host and its child objects.

- The **Resource Usage** section displays capacity and usage summary for host CPU and memory. It also presents a high-level overview for datastores connected to the host – state of the datastore, its capacity and the amount of free space on the datastore.

- The **Latest Alarms** list displays the latest 15 alarms for the host and its child objects. The section presents a summary on the most recent problems. Click the link in the **Source** column to drill-down to the list of alarms for the host and its child objects.

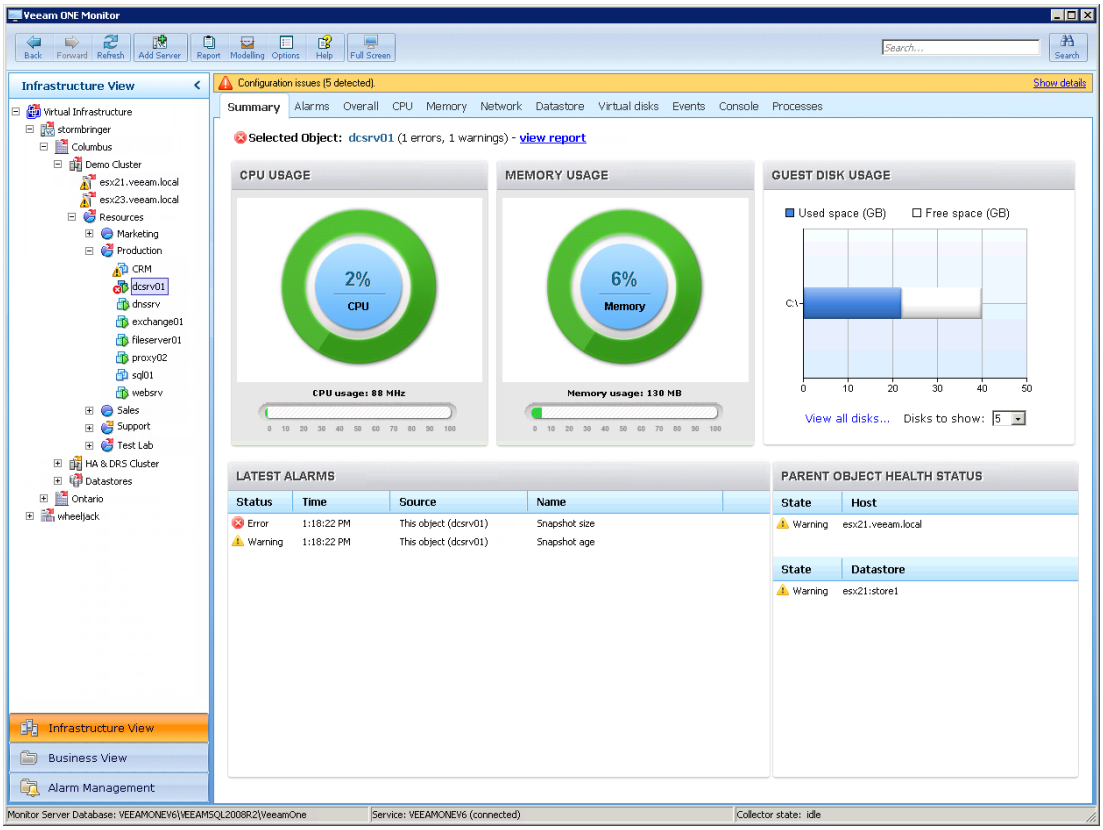
- The **Alarms by Object** list displays 15 objects with the greatest number of alarms for the host and its child objects. The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 errors and 1 warning related to the object.

  The section gives an overview of the most problematic objects at the host level. Click the link in the **Source** column to drill-down to the list of alarms for the host and its child objects.

For details on working with alarms, refer to the Monitoring Alarms section.

Virtual Machine Summary

The virtual machine **Summary** dashboard provides a high-level overview of the VM health state and performance. In addition, it reflects the state of objects that can affect the VM performance – the parent host and the datastores that host VM files.

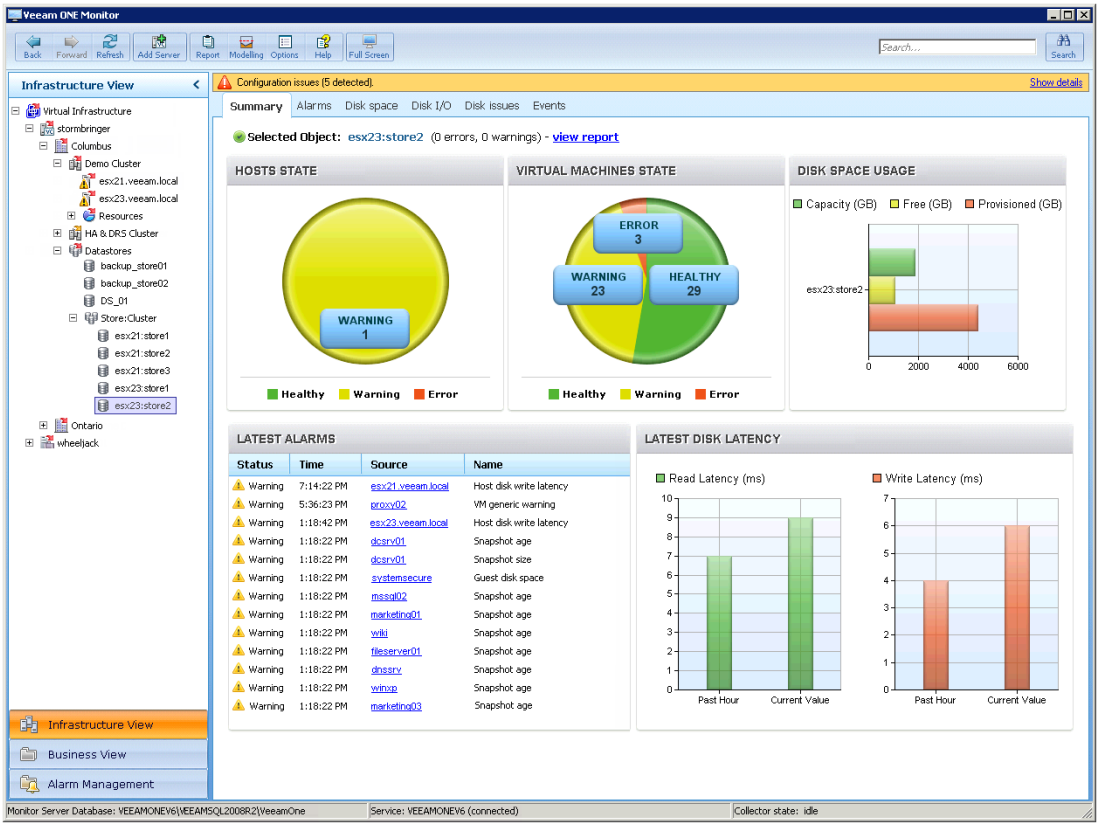


- The **CPU Usage** and **Memory Usage** charts reflect the amount of CPU and memory resources that the VM is currently consuming.
- The **Guest Disk Usage** chart reflects the amount of available and used guest disk space with a breakdown by disks. Use the **Disks to show** list to change the number of disks to display on the chart. Note that the chart displays guest disks with the greatest amount of used space. Note that details on the guest disk usage are available only for VMs that have VMware Tools installed.

  Click the **View all disks** to preview details on all guest disks. You can also suppress alarms on specific disks using the **Guests disks** window. To do so, select the **Suppress alarm** check boxes next to necessary disks.
- The **Latest Alarms** list displays the latest 15 alarms for the VM. The section presents a summary on the most recent problems related to the VM.
- The **Parent Object Health Status** section displays the current state of the host where the VM resides and the state of datastores that host VMs files. Information in this section may help you to estimate the impact of parent objects on the VM and speed up root cause analysis.

Datastore Summary

The datastore **Summary** dashboard provides a high-level overview of the datastore health state and performance. In addition, it reflects the state of objects that can affect the datastore performance – hosts and VMs that work with the datastore.



- The **Hosts State** and **Virtual Machines State** charts reflect the summary health state of hosts and VMs that work with the datastore. Every colored segment represents the number of objects in a certain state – healthy objects, objects with warnings and objects with errors.

  Click the problematic chart to drill-down to additional details and investigate the state of virtual infrastructure objects – Veeam ONE Monitor will open the list of alarms. For details on working with alarms, refer to the Monitoring Alarms section.

- The **Disk Space Usage** chart reflects the amount of available, used and provisioned disk space on the datastore.

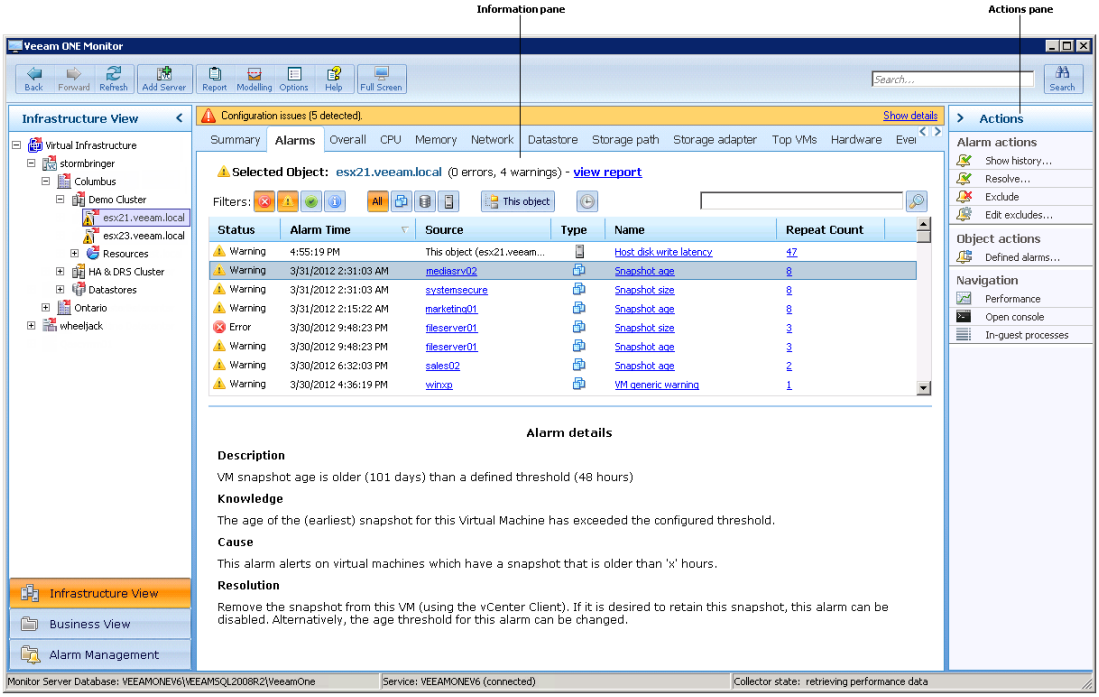
- The **Latest Alarms** list displays the latest 15 alarms for the datastore and for objects that work with this datastore. Click the link in the **Source** column to drill-down to the list of alarms.

- The **Latest Disk Latency** section displays the current read and write latency readings as well as the rollup latency values for the past hour.

Monitoring Alarms

When the state of your virtual environment changes to match conditions described by alarm rules (for examples, specific events occur or monitored parameters exceed or fall below alarm thresholds), Veeam ONE Monitor triggers alarms.

To view alarms related to a specific virtual infrastructure object (or objects), select the necessary virtual infrastructure node in the inventory pane and open the **Alarms** tab in the details pane. The **Alarms** dashboard is the primary location that allows you to identify a problem and drill down to detailed views for investigating the root cause.



The **Alarms** dashboard is split into two panes – information pane and actions pane.

Information pane

The information pane displays all alarms triggered for the virtual infrastructure object selected in the virtual infrastructure tree and alarms for its child objects. Every alarm is described with the following details:

- **Status** – current status of the alarm (*Warning*, *Error*, *Resolved* or *Info*). If an alarm fired multiple times, Veeam ONE Monitor will display its latest state.
- **Alarm time** – date and time when the alarm fired. If the alarm fires multiple times, Veeam ONE Monitor will display the latest time when the alarm was triggered.
- **Source** – name of the virtual infrastructure object that caused the alarm to be raised. To view all alarms related to the virtual infrastructure object, click the source link.
- **Type** – type of the alarm.
- **Name** – alarm name. Click the name link to open alarm details in the **Alarm Management** section. If the alarm name is displayed as plain text, this means that a corresponding alarm has been already deleted.
- **Repeat count** – the number of times the alarm fired. Click the repeat count link to view the alarm history. For more details, refer to the Viewing Alarm History section.

You can use filter buttons at the top of the list to filter alarms by the following criteria:

- Alarm status: to display or hide in the list alarms with a specific level of severity, click the status buttons at the top of the list – **Show objects with errors**, **Show objects with warnings**, **Show resolved alarms** and **Show information messages**.
- Object type: to display or hide in the list alarms for a specific type of virtual infrastructure objects, click the object type buttons at the top of the list – **Show alarms for all types of objects**, **Show virtual machine alarms**, **Show datastore alarms**, **Show host alarms**.
- Parent-child dependencies: click the **This object** button to display only those alarms that are related to the virtual infrastructure object you selected in the virtual infrastructure tree on the left. Release the button if you want to include in the list alarms for the selected virtual infrastructure object and alarms for its child objects as well.
- Time period: click the **Filter alarms by time period** button to set the time interval when alarms were triggered. Release the button to discard the time period filter.
- Alarm name: use the search field to find alarms by alarm name.

The lower section of the information pane displays alarm KB details – description of the problem, possible causes, instructions for resolution, links to external resources and other details.

Actions pane

The **Actions** pane on the right of the **Alarms** dashboard displays quick links to actions that you can perform over the selected alarm. You can also access action links if you right-click an alarm in the list.

- The **Alarm actions** section displays links to actions that you can perform over alarms in the list. To learn more about alarm actions, refer to the Viewing Alarm History, Resolving Alarms and Working with Excludes sections.
- The **Object actions** section displays a link that allows you to view and manage the list of defined alarms for an object that is selected in the virtual infrastructure hierarchy. To learn more, refer to the Excluding Objects from Multiple Alarms section.
- The **Navigation** section displays links that allow you to investigate the state of the monitored object in detail: drill down to performance charts, open VM console and view the list of in-guest processes. To learn more, refer to the Working with Performance Charts, Accessing VM Console and Viewing In-Guest Processes sections.

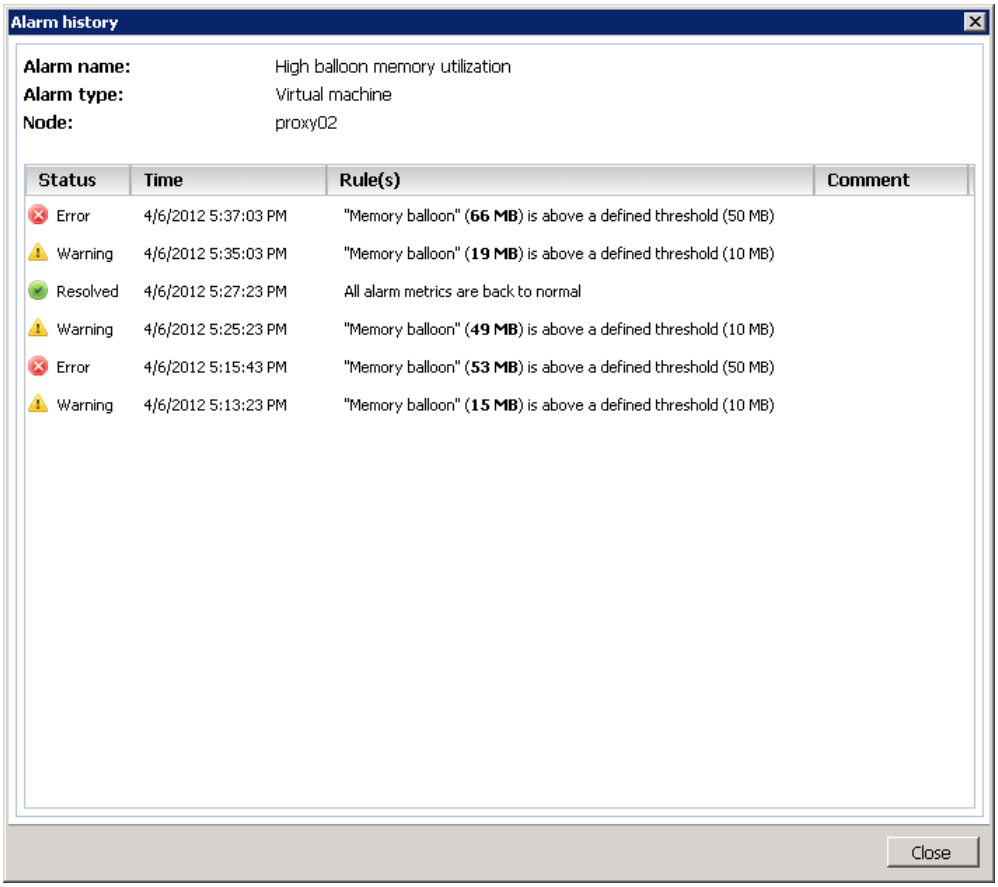
Viewing Alarm History

Veeam ONE Monitor keeps the history of alarm status changes for every fired alarm. The number of times the alarm fired is displayed as the **Repeat Count** value in the list of alarms.

To view detailed alarm history open the **Alarms** tab and do one of the following:

- Click the **Repeat Count** link in the list of alarms.
- Double-click an alarm in the list.
- Right-click an alarm and select **Show history** from the shortcut menu.
- Select an alarm in the list and click **Show history** in the **Actions** pane.

The **Alarm history** window provides detailed data on the history of alarm status changes: assigned status, time, rule that triggered the alarm and comments for resolved alarms.



Resolving Alarms

Veeam ONE Monitor automatically resolves alarms in the following cases:

- When an alarm is disabled or deleted.
- When an object that caused the alarm to fire is deleted or excluded from the alarm assignment scope.
- When conditions that triggered the alarm are eliminated, and the alarm reacts to this automatically. Some alarms can be configured to change the alarm severity to Resolved in specific cases. Other alarms (such as alarms that trigger when resource usage is above a certain threshold) are resolved automatically when the resource usage level is back to normal.

You can also manually resolve alarms if the state of the monitored object has returned back to normal, and/or if the alarm requires no further investigation and no corrective actions should be taken. To resolve one or more alarms, follow the next steps:

1. Open the **Alarms** tab.
2. Select the necessary alarms and do one of the following:
   - Right-click the selection and choose **Resolve** in the shortcut menu.
   - Select one or more alarms in the list and click **Resolve** in the **Actions** pane.
3. In the **Resolve alarm** window, enter the reason for changing the alarm status or any other comments. The message you enter will be available in the **Comment** field in the alarm history details.

Working with Excludes

If you do not want to receive alarms about a specific virtual infrastructure object, you can exclude such an object from the alarm assignment. For example, you have assigned a *VM CPU Usage* alarm to the vCenter Server, but you do not want to be alerted of CPU performance spikes for VMs that belong to the QA department. In this case, you can exclude QA VMs from the alarm assignment scope.

Excluding Single Objects

To exclude an object from the alarm assignment scope, follow the next steps:

1. Open the **Alarms** tab.
2. Select the necessary alarms and do one of the following:
   - Right-click the alarms and choose **Exclude** in the shortcut menu.
   - Click **Exclude** in the **Actions** pane.

   If you selected a container in the virtual infrastructure tree and have chosen to exclude its child object, Veeam ONE Monitor will provide two exclusion choices – exclude the child object only or exclude the whole container from the alarm assignment.

   For example, you have selected a cluster in the virtual infrastructure tree. In the list of alarms you can see alerts on hosts included to the cluster. If you select an alert and try to exclude a specific host from the alert assignment, you can exclude either the host or the whole cluster.
3. Click **Yes** in the dialog box to confirm exclusion.

Note When you exclude an object from an alarm, all unresolved *Warning* or *Error* notifications that were triggered by this alarm for the object will change their status to *Resolved*.

Excluding Multiple Objects

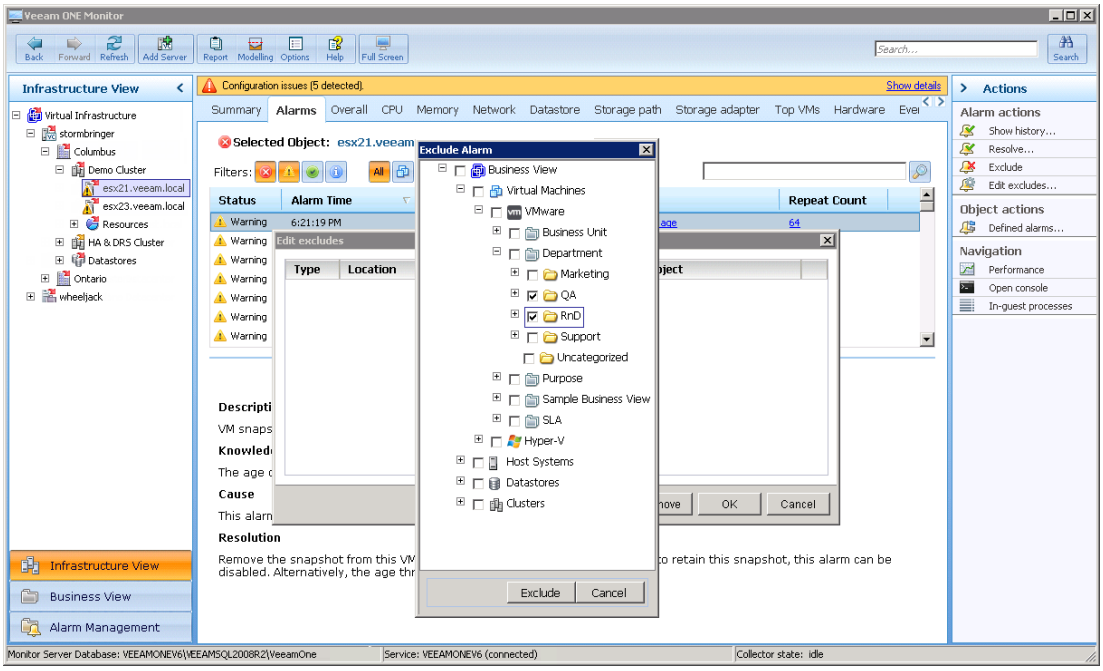
To exclude multiple virtual infrastructure objects or Business View categorized objects from the alarm assignment scope, follow the next steps:

1. Open the **Alarms** tab.
2. Select the necessary alarm and do one of the following:
   - Right-click the alarm and choose **Edit excludes** in the shortcut menu.
   - Click **Edit excludes** in the **Actions** pane.
3. In the **Edit excludes** window, click the **Add** button and select one of the following options:
   - **Infrastructure tree** – choose this option if you want to select objects from the virtual infrastructure hierarchy.

You can select specific objects that match the alarm type or choose parent objects (containers) from the virtual infrastructure hierarchy. For example, if you work with the alarm of the **Virtual Machine** type, you can exclude a specific VM, resource pool, ESX(i) host, cluster, datacenter or vCenter Server.

- **Business View** –choose this option if you want to exclude custom categorization groups that you have previously configured in Veeam ONE Business View or objects from these groups. For example, if you do not want to monitor performance metrics for VMs that belong to the *QA* and *RnD* departments, you can group VMs by department in Veeam ONE Business View and then exclude *QA* and *RnD* VMs from alarm assignment scope in Veeam ONE Monitor.

4. Repeat step 3 for all virtual infrastructure objects or categorization groups you want to exclude.

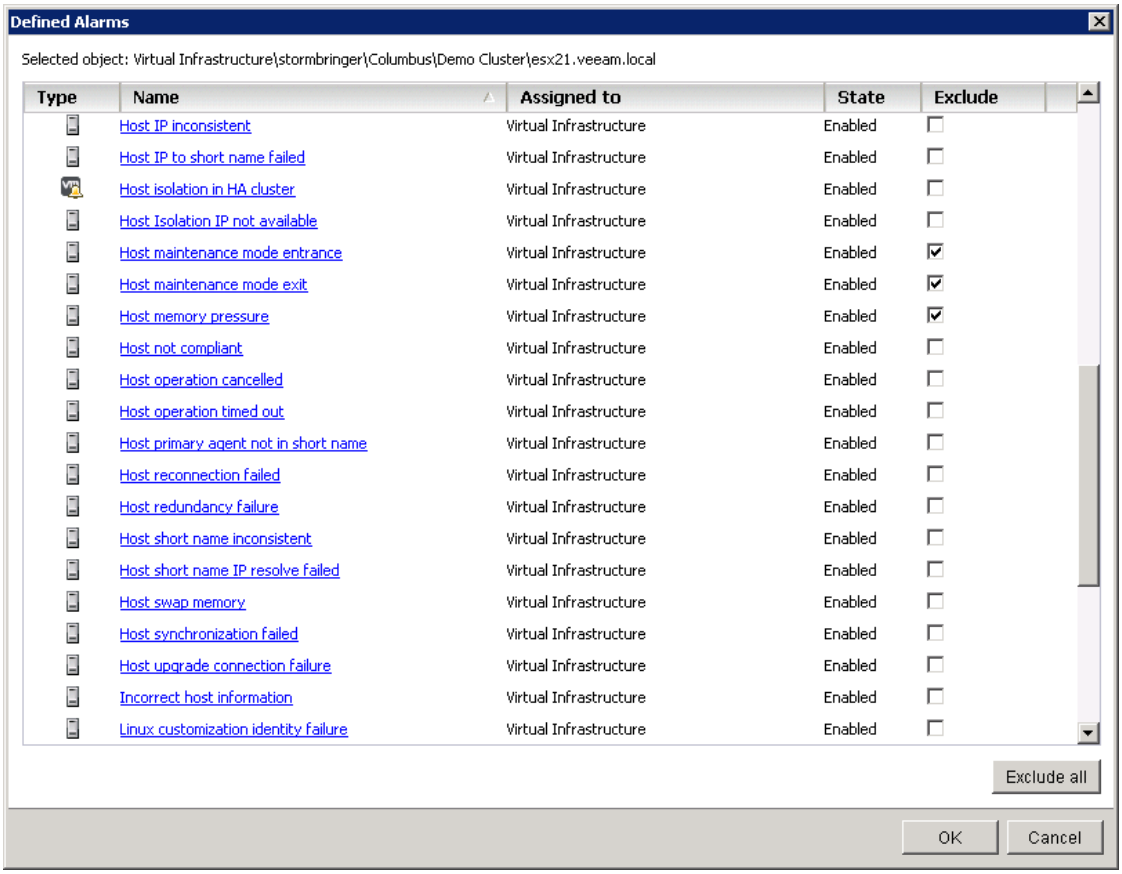


Excluding Objects from Multiple Alarms

To exclude a single virtual infrastructure object from multiple alarms at once, follow the next steps:

1. Select any alarm for the necessary virtual infrastructure object, open the **Alarms** tab and do one of the following:
   - Right-click the alarm and choose **Defined alarms** in the shortcut menu.
   - Click **Defined alarms** in the **Actions** pane.

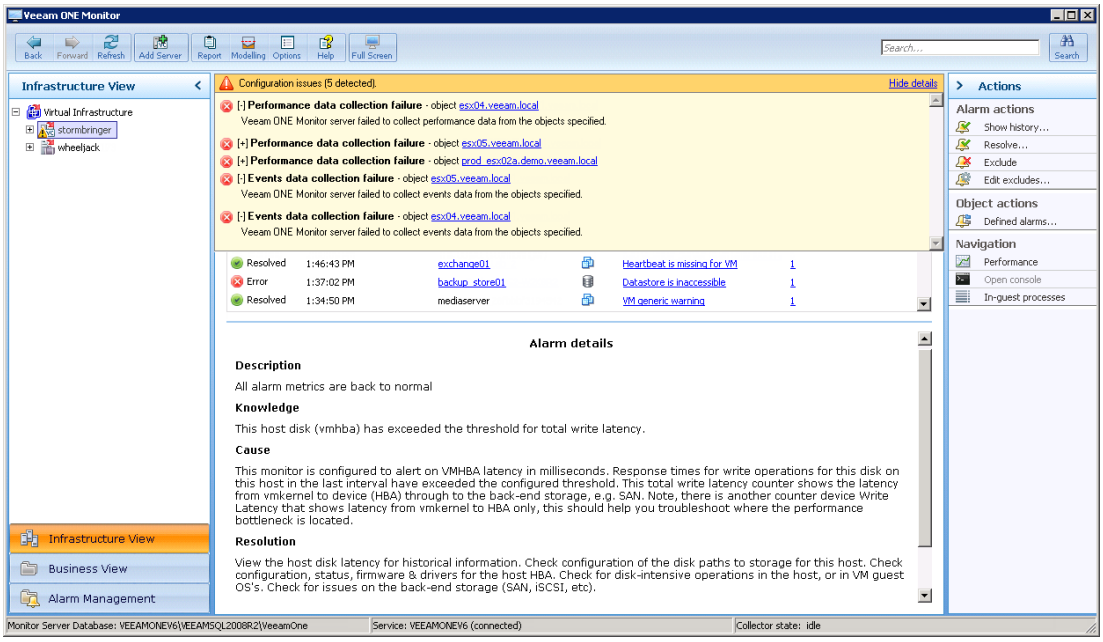
   Alternatively, you can right-click the necessary object and select **Alarms > Exclude Alarms** from the shortcut menu.
2. The **Defined alarms** window will display the list of enabled and disabled alarms that apply to the selected object. Select check boxes next to alarms from which you want to exclude the object.
3. Click **OK**.



Monitoring Internal Alarms

In addition to alarms for monitoring your virtual environment virtual environment, Veeam ONE Monitor comes with a set of predefined alarms that allow you to monitor internal Veeam ONE Monitor problems – such as, data collection issues and problems with virtual server connection.

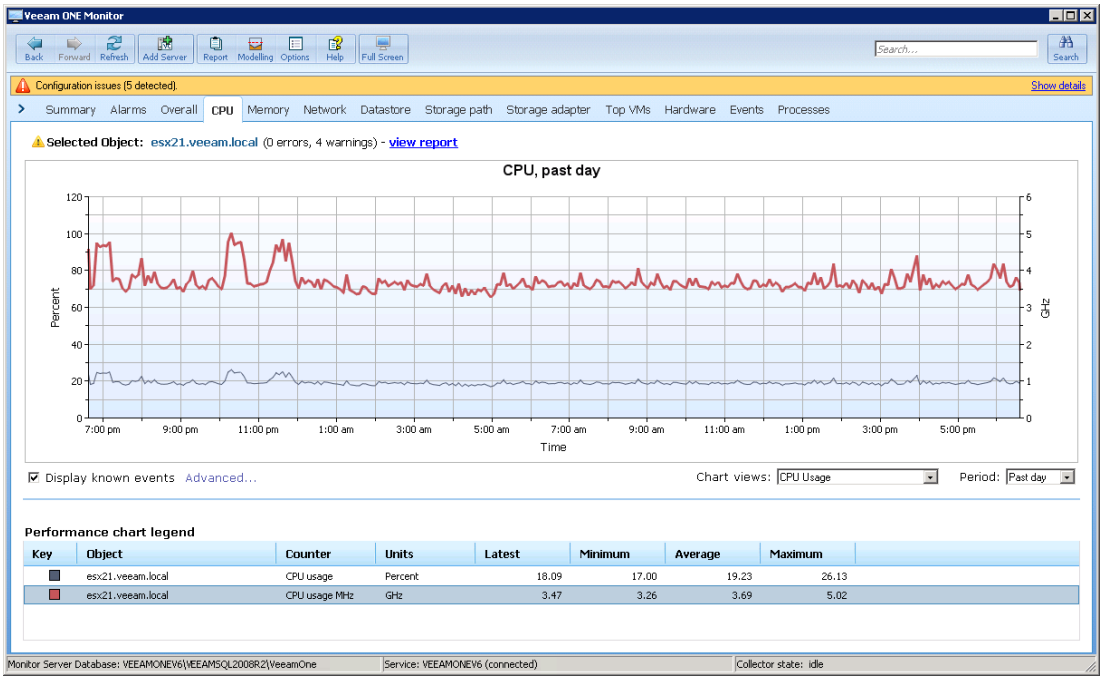
Internal alarms are grouped in the **Configuration issues** pane and are also available on the **Alarms** monitoring dashboard. To view alarms, click the **Show details** link on the right of the pane and expand the alarm details - alarm name, alarm description and the name of the infrastructure object that caused the alarm to fire. Click the object name to drill-down to the list of alarms for the selected object.



Working with Performance Charts

Veeam ONE Monitor provides a number of graphical performance charts for various levels of your virtual infrastructure. The charts allow you to drill down to key performance metrics to diagnose performance issues and perform root cause analysis.

The set of charts in the information pane varies depending on the type of the object selected in the inventory panel. To begin working with tabs, choose an object in the inventory panel and open the chart tab in the information pane.



Every graph in the performance chart visualizes a specific parameter of a virtual infrastructure object (or an object instance) or, if you select to display summary data, the resource summary information. For example, graphs in the Network chart display information on each NIC instance of an ESX(i) host or virtual machine, as well as summary network data.

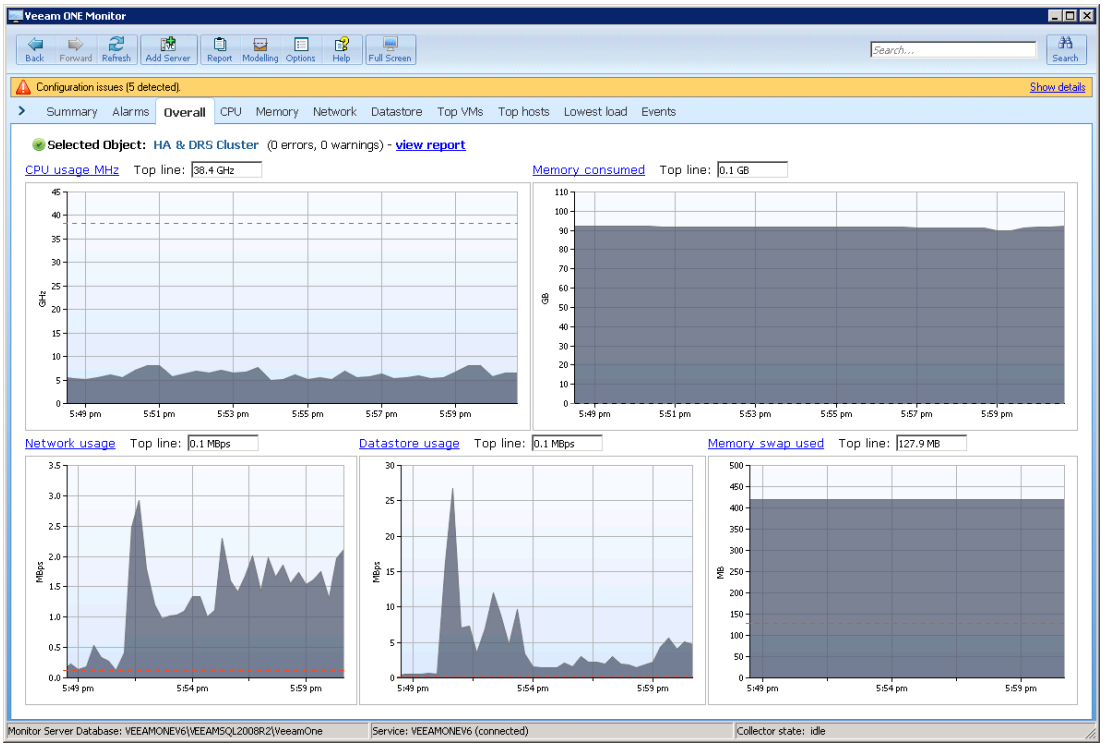
A performance chart displays data across a particular time period (the horizontal axis) using two scales of measurement units (vertical axes). The displayed measurement units may vary depending on selected performance counters; however, the number of units is always limited to two. Please bear in mind this restriction: you will not be able to select counters using three or more measurement units.

The **Performance chart legend** helps you read the chart, informing about objects (or object instances) and counters that are currently displayed. The information provided is: key color, object name (or object instance name), list of measurement counters and respective units of measurement, as well as the latest, minimum, average, and maximum performance data of the object.

Veeam ONE Monitor performance charts can be easily customized to suit your requirements. To learn more about customization options, refer to the Customizing Performance Charts section.

Overall Chart

The **Overall** dashboard presents currently aggregated data from all subsystems for the selected virtual infrastructure object — CPU, Network, Memory, Swap, Datastore. The charts display data for the last 15 minutes.



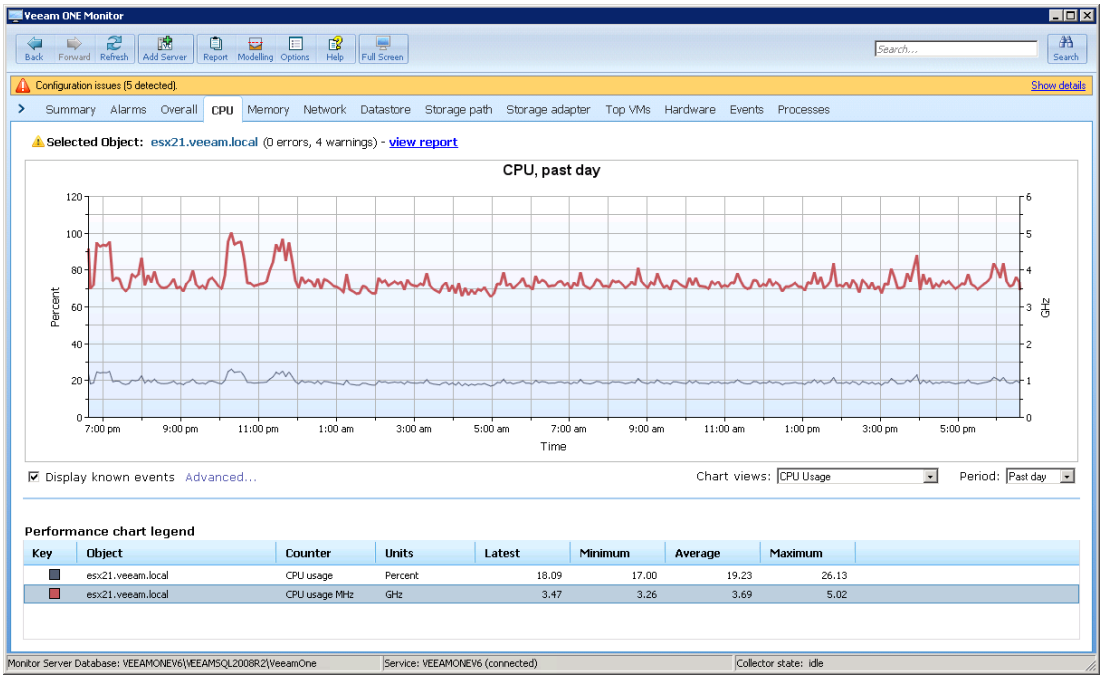
In the **Top line** field, you can set a threshold value. The top line is always displayed on the chart and can help you monitor whether some metrics exceed the healthy value range.

If you do not need to display the top lines, either enter "0" (zero) in the **Top line** field or disable top lines in Veeam ONE chart settings. In this case, the Y-axis will scale automatically, to match the range of the displayed data.

To drill down to performance chart details, click the link above a performance chart. Veeam ONE Monitor will open a corresponding performance chart for the selected virtual infrastructure object.

CPU Performance Chart

The **CPU** chart displays statistical information on the CPU utilization by the selected object.



The **CPU** chart comes with a number of predefined chart views. Every predefined view logically groups related CPU counters to display the most valuable statistics and help you speed up troubleshooting and root cause analysis of performance problems.

The following table includes information on counters used in predefined views and provides a description for each counter.

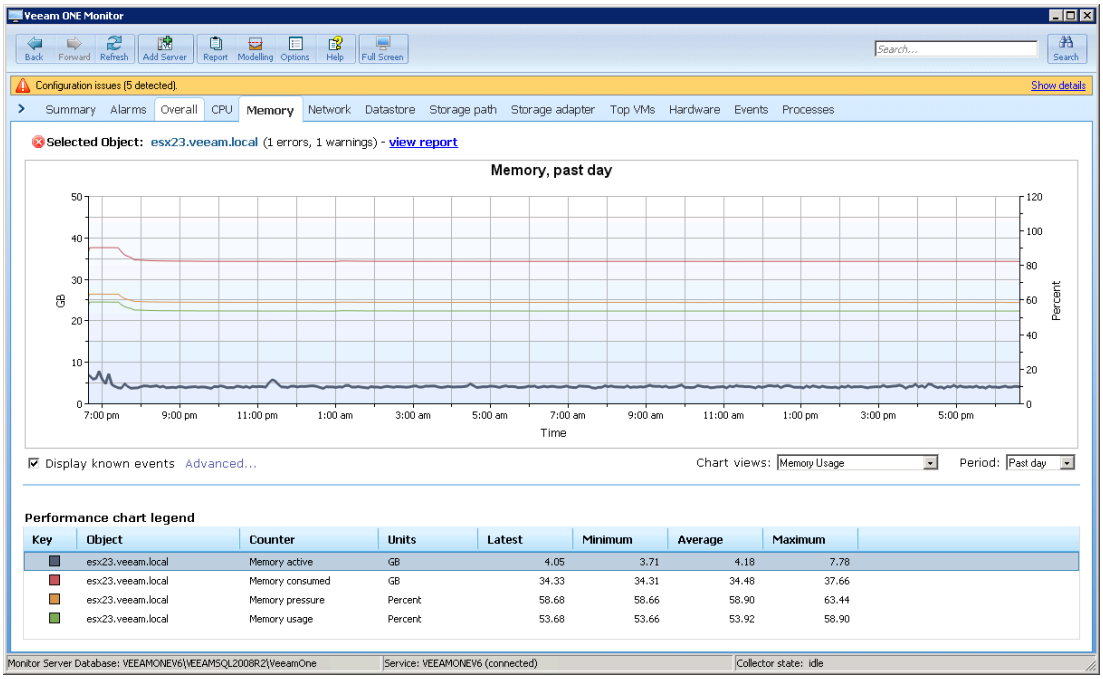
Chart View	Counter	Measurement Unit	Description
ESX(i) Host*			
CPU Usage	CPU usage	Percent	Percentage of physical CPU resources which is actively used (percentage of used CPU against available CPU).
	CPU usage MHz	MHz	Total amount of physical CPU resources actively used by VMs running on the host.
CPU Bottlenecks	Average CPU ready	Percent	Average CPU Ready value for all VMs on the host.
Virtual Machine*			
CPU Usage	CPU usage	Percent	Percentage of physical CPU resources which is actively used by the VM.
	CPU usage MHz	MHz	Amount of physical CPU resources actively used by the VM.
CPU System	Average CPU system	Percent	CPU time spent in the host VMkernel. The value does not include guest code execution.
CPU Bottlenecks	Average CPU wait	Percent	CPU time the VM spent waiting for hardware or VMkernel lock thread locks.
	Average CPU ready	Percent	Percentage of time the VM was ready but could not get scheduled to run on the physical CPU.

*For objects that are parent to ESX(i) hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Charts for resource pools display rollup values for all VMs in the resource pool.

Memory Performance Chart

The **Memory** chart displays different types of memory usage statistics for the selected object.



The **Memory** chart comes with a number of predefined chart views. Every predefined view logically groups related memory counters to display the most valuable statistics and help you speed up troubleshooting and root cause analysis of performance problems.

The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
ESX(i) Host*			
Memory Usage	Memory active	KB	Sum of active memory metrics for all VMs plus memory actively used by running vSphere services on the host.
	Memory consumed	KB	Amount of physical memory used on the host, including memory used by the Service Console, VMkernel and vSphere services, and total memory consumed by VMs.
	Memory pressure	Percent	Potential memory demand that is based on total allocated memory for running VMs, memory overhead, effects of memory sharing and total available memory.
	Memory usage	Percent	The percentage of active memory against the configured memory amount for all VMs on the host.
Memory Swap Rate	Swap in rate	KBps	Rate at which physical memory is swapped from disk into host active memory.
	Swap out rate	KBps	Rate at which physical memory is swapped from host active memory to disk.
	Memory swap used	KB	Amount of physical memory currently swapped to disk: sum of memory swapped for all VMs and vSphere services on the host.
Memory	Memory compressed	KB	Amount of physical memory compressed for all VMs on the host.

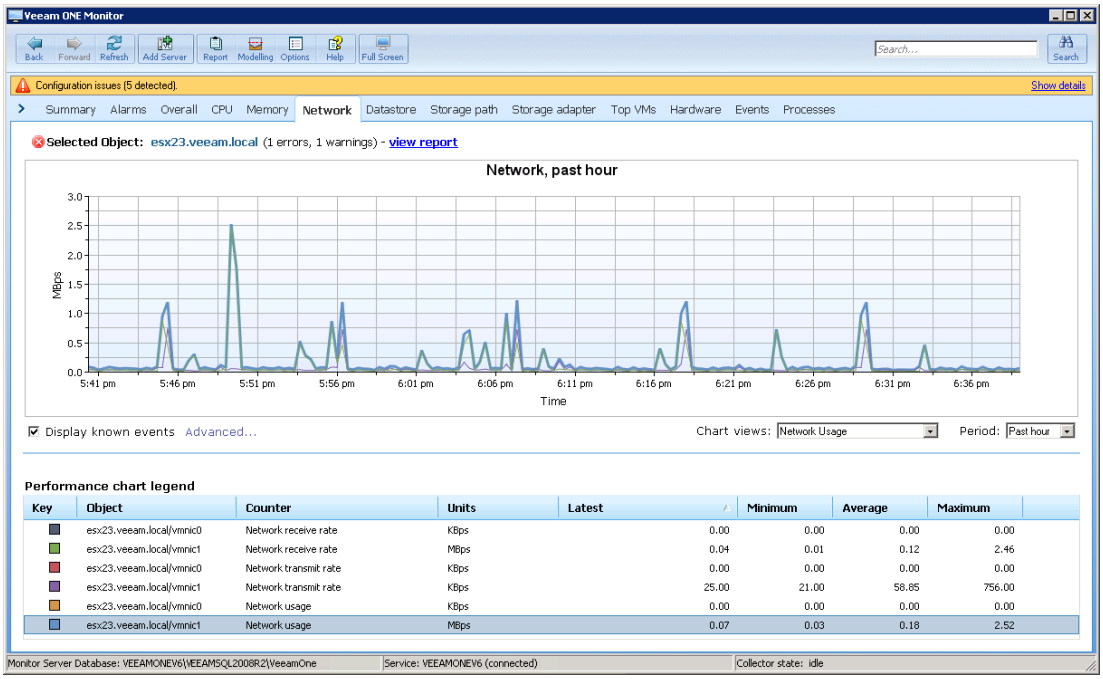
Chart View	Counter	Measurement Unit	Description
Management	Memory overhead	KB	Total amount of memory overhead plus memory overhead of running vSphere services on the host.
	Memory balloon	KB	Amount of host memory reclaimed through ballooning from all VMs on the host.
Memory Sharing	Memory shared	KB	Sum of memory shared metrics for all VMs plus memory consumed by running vSphere services on the host.
	Memory shared common	KB	Total amount of physical memory shared by all VMs and running vSphere services on the host.
Virtual Machine*			
Memory Usage	Memory active	KB	Amount of physical memory that the VM is actively using.
	Memory consumed	KB	Amount of physical memory consumed by the VM. The value includes the shared and reserved memory; overhead memory is not taken into account.
	Memory usage	Percent	The percentage of active memory against the configured memory amount for the VM.
Memory Swap Rate	Swap in rate	KBps	Rate at which physical memory for the VM is swapped from disk into host active memory.
	Swap out rate	KBps	Rate at which physical memory for the VM is swapped from host active memory to disk.
	Memory swapped	KB	Amount of physical memory currently swapped to disk for the VM.
Memory Management	Memory compressed	KB	Amount of physical memory compressed for the VM.
	Memory overhead	KB	Amount of physical memory that the VMkernel uses to run the VM.
	Memory balloon	KB	Amount of host memory reclaimed from the VM through ballooning.
	Memory saved by zipping	KB	Amount of physical memory compressed for the VM.
Memory Sharing	Memory shared	KB	Amount of physical memory that the VM shared with other virtual machines.

*For objects that are parent to ESX(i) hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Charts for resource pools display rollup values for all VMs in the resource pool.

Network Performance Chart

The **Network** chart displays the network performance data for the selected object.



The **Network** chart comes with a number of predefined chart views. Every predefined view logically groups related network counters to display the most valuable statistics and help you speed up troubleshooting and root cause analysis of performance problems.

The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
ESX(i) Host*			
Network Usage	Network receive rate	KBps	The rate at which data is received by each physical NIC on the host.
	Network transmit rate	KBps	The rate at which data is transmitted by each physical NIC on the host.
	Network usage	KBps	Network utilization, total amount of data received and transmitted by all physical NICs on the host.
Network Transfer Rate (Packets)	Received packets per second	Number	Average number of packets received per second by each physical NIC on the host.
	Transmitted packets per second	Number	Average number of packets transmitted per second by each physical NIC on the host.
Virtual Machine*			
Network Usage	Network receive rate	KBps	The rate at which data is received by each vNIC of the VM.
	Network transmit rate	KBps	The rate at which data is transmitted by each vNIC of the VM.
	Network usage	KBps	Network utilization, total amount of data received and transmitted by all physical vNICs of the VM.
Network Transfer Rate (Packets)	Received packets per second	Number	Average number of packets received per second by each vNIC of the VM.
	Transmitted	Number	Average number of packets transmitted per

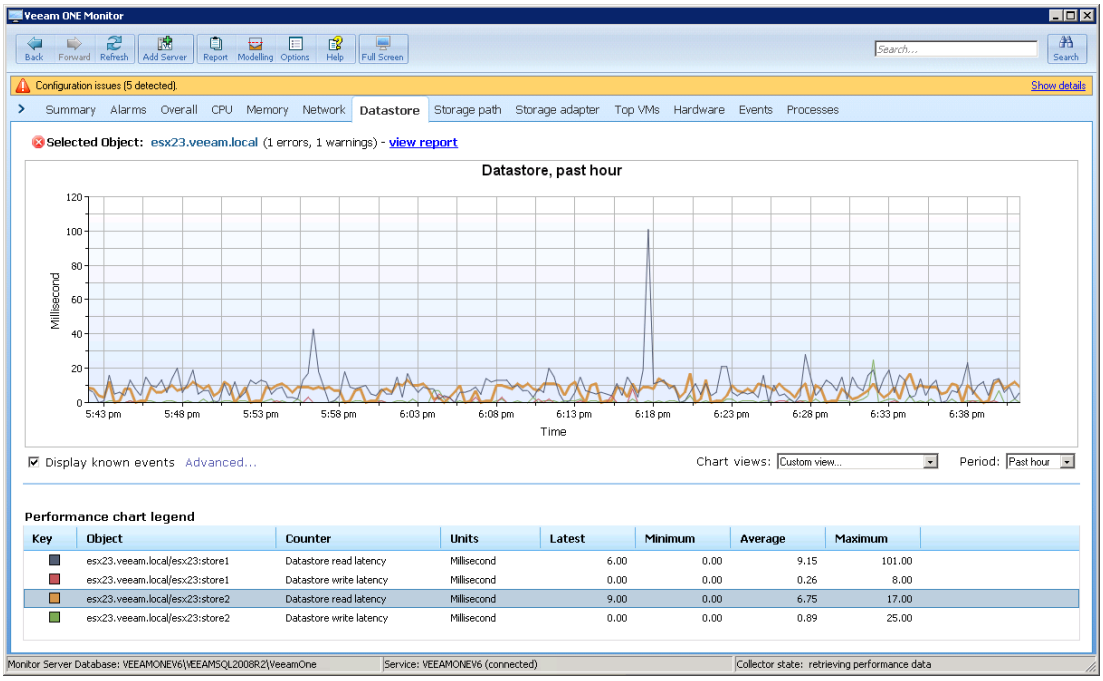
Chart View	Counter	Measurement Unit	Description
	packets per second		second by each vNIC of the VM.

*For objects that are parent to ESX(i) hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Charts for resource pools display rollup values for all VMs in the resource pool.

Datastore Performance Chart

The **Datastore** chart provides performance statistics for all datastores used by the selected object and its child objects.



The **Datastore** chart comes with a number of predefined chart views. Every predefined view logically groups related datastore counters to display the most valuable statistics and help you speed up troubleshooting and root cause analysis of performance problems.

The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
ESX(i) Host*			
Datastore IOPS	Datastore I/O	Number	Total number of I/O operations on the datastore.
	Datastore read I/O	Number	Average number of read commands to the datastore.
	Datastore write I/O	Number	Average number of write commands to the datastore.
Datastore Usage Rates	Datastore read rate	KBps	Rate at which data is read from the datastore.
	Datastore write rate	KBps	Rate at which data is written to the datastore.
	Datastore usage	KBps	Sum of read and write rates for the datastore.
Datastore Latency	Datastore read latency	Millisecond	Average amount of time taken for a read operation from the datastore.
	Datastore write latency	Millisecond	Average amount of time taken for a write operation from the datastore.

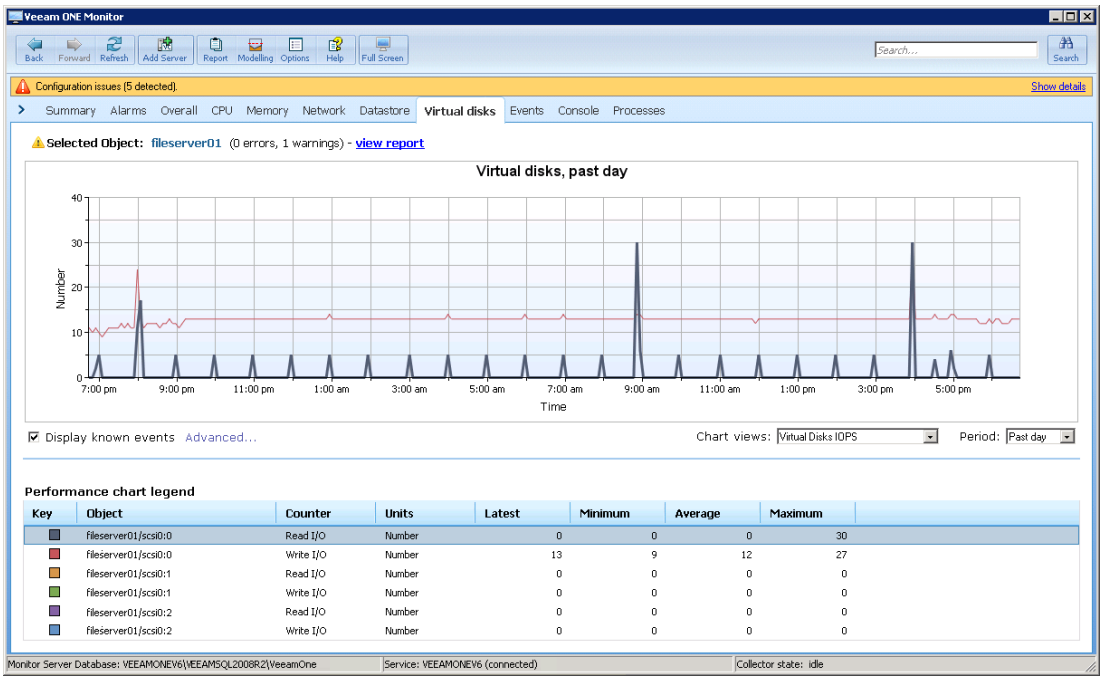
Chart View	Counter	Measurement Unit	Description
	Datastore highest latency	Millisecond	Highest latency value across all datastores used by the host.
Datastore Issues	Datastore command aborts	Number	Number of aborted SCSI commands.
	Datastore bus resets	Number	Number of SCSI bus reset commands.
	Datastore maximum queue depth	Number	Maximum number of queued requests for the datastore.
Virtual Machine*			
Datastore IOPS	Datastore I/O	Number	Total number of I/O operations on the datastore.
	Datastore read I/O	Number	Average number of read commands to the datastore.
	Datastore write I/O	Number	Average number of write commands to the datastore.
Datastore Usage Rates	Datastore read rate	KBps	Rate at which data is read from the datastore.
	Datastore write rate	KBps	Rate at which data is written to the datastore.
	Datastore usage	KBps	Sum of read and write rates for the datastore.
Datastore Latency	Datastore read latency	Millisecond	Average amount of time taken for a read operation from the datastore.
	Datastore write latency	Millisecond	Average amount of time taken for a write operation from the datastore.
	Datastore highest latency	Millisecond	Highest latency value across all datastores used by the host.
Datastore Issues	Datastore command aborts	Number	Number of aborted SCSI commands.
	Datastore bus resets	Number	Number of SCSI bus reset commands.

*For objects that are parent to ESX(i) hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Charts for resource pools display rollup values for all VMs in the resource pool.

Virtual Disks Performance Chart

The **Virtual Disks** chart provides performance statistics for partitions of all disks on the selected VM.



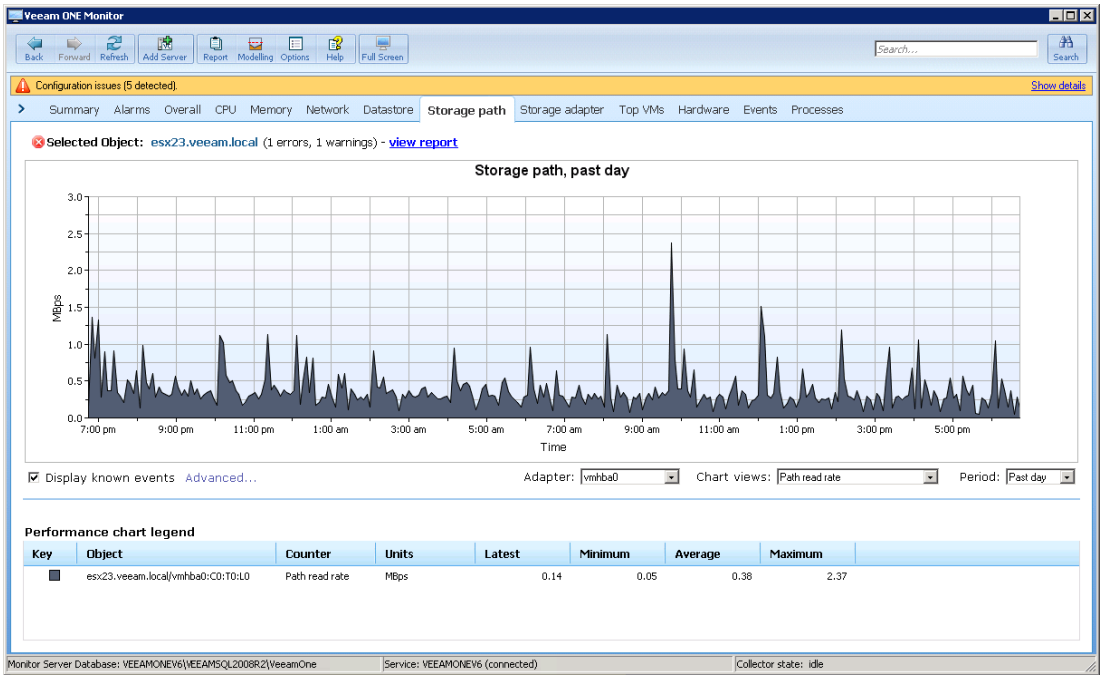
The **Virtual Disks** chart comes with a number of predefined chart views. Every predefined view logically groups related virtual disk counters to display the most valuable statistics and help you speed up troubleshooting and root cause analysis of performance problems.

The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
Virtual Disk IOPS	Read I/O	Number	Average number of read commands issued per second to the virtual disk.
	Write I/O	Number	Average number of write commands issued per second to the virtual disk.
Virtual Disk Usage Rates	Read rate	KBps	Rate at which data is read from the virtual disk.
	Write rate	KBps	Rate at which data is written to the virtual disk.
Virtual Disk Latency	Read latency	Millisecond	Average amount of time taken for a read operation from the virtual disk.
	Write latency	Millisecond	Average amount of time taken for a write operation from the virtual disk.

Storage Path Performance Chart

The **Storage path** chart provides performance statistics for paths used by the storage adapter on the selected ESX(i) host. Multiple paths are used for redundancy and load balancing. You can switch between adapters using the **Adapter** list below the performance chart.



The name of each storage device connected to the storage adapter via the selected path is specified after the ESX(i) host address (separated by a forward slash) in the **Object** column of the chart legend. It is displayed in the following format:

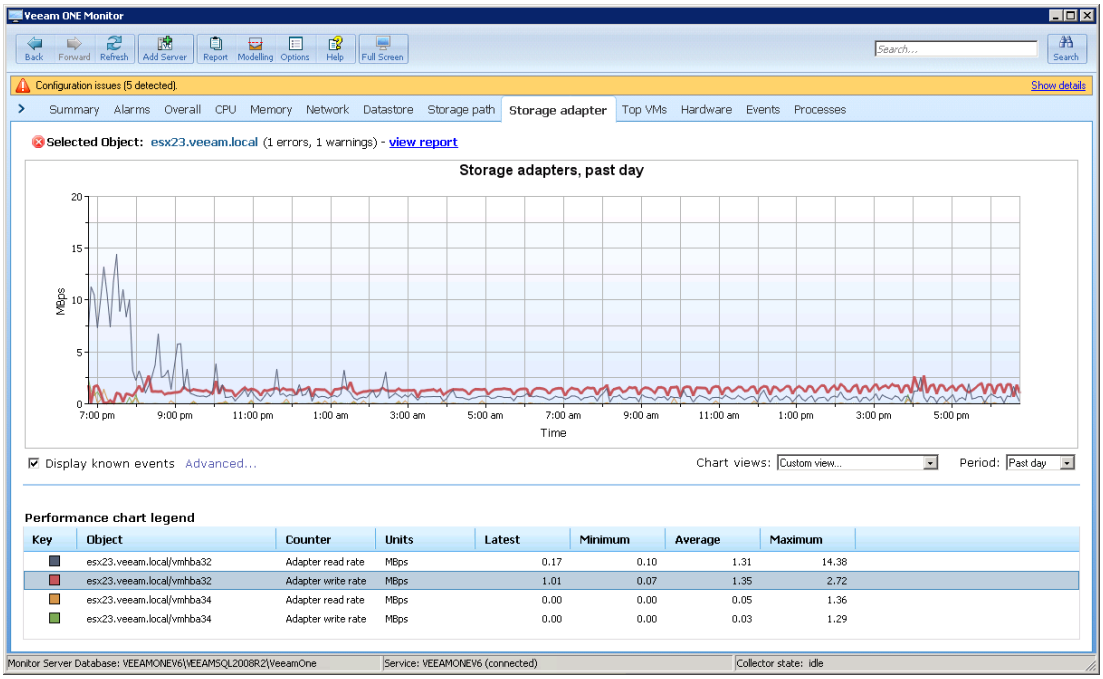
<HBA>:<SCSI target>:<SCSI LUN>:<disk partition>

The **Storage Path** chart comes with a number of predefined chart views. The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Measurement Unit	Description
Path I/O	Number	Average number of commands issued per second via the path.
Path read I/O	Number	Average number of read commands issued per second via the path.
Path write I/O	Number	Average number of write commands issued per second via the path.
Path read rate	KBps	Rate at which data is read via the path.
Path write rate	KBps	Rate at which data is written via the path.
Path read latency	Millisecond	Average amount of time taken for a read operation via the path.
Path write latency	Millisecond	Average amount of time taken for a write operation via the path.

Storage Adapter Performance Chart

The **Storage adapter** chart provides performance statistics for the storage adapter on the selected ESX(i) host.



The **Storage Adapter** chart comes with a number of predefined chart views. Every predefined view logically groups related storage adapter counters to display the most valuable statistics and help you speed up troubleshooting and root cause analysis of performance problems.

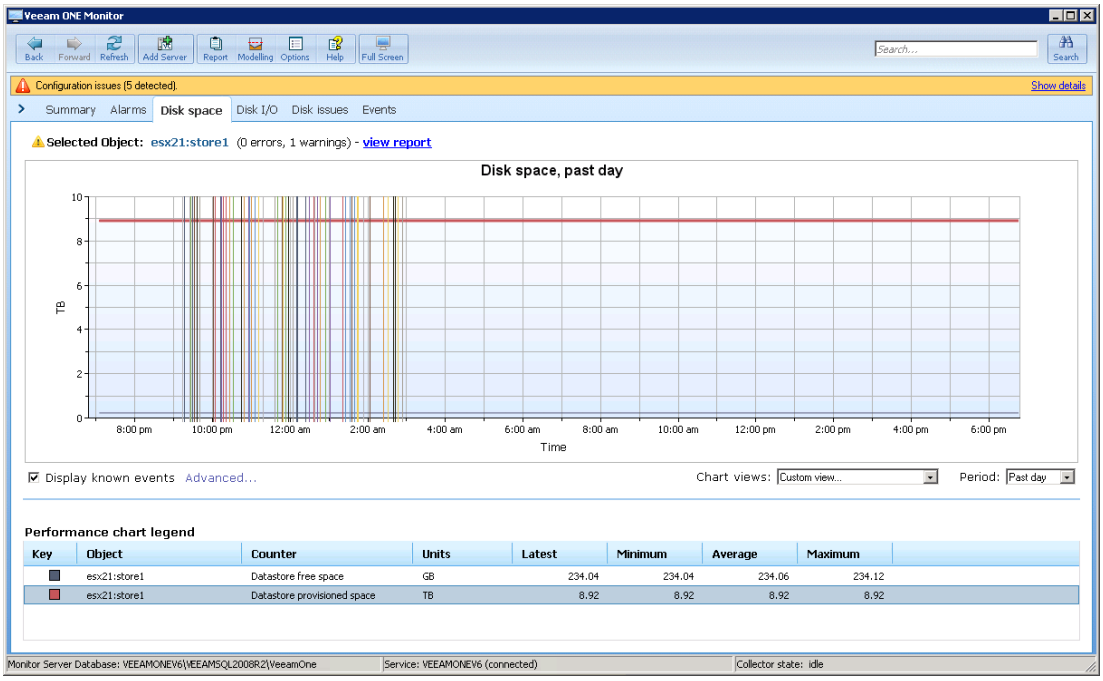
The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
Adapter IOPS	Adapter I/O	Number	Average number of commands issued per second to the storage device by the adapter,
	Adapter read I/O	Number	Average number of read commands issued to the storage device by the adapter.
	Adapter write I/O	Number	Average number of write commands issued per second to the storage device by the adapter.
Adapter Usage Rate	Adapter read rate	KBps	Rate at which data is read from the storage device by the adapter
	Adapter write rate	KBps	Rate at which data is written to the storage device by the adapter.
Adapter Latency	Adapter read latency	Millisecond	Average amount of time taken for a read operation from the storage device by the adapter.
	Adapter write latency	Millisecond	Average amount of time taken for a write operation to the storage device by the adapter.

Disk Space Chart

The chart is available for datastores and datastore clusters only.

The **Disk Space** chart displays information on disk space resources for the selected datastore.



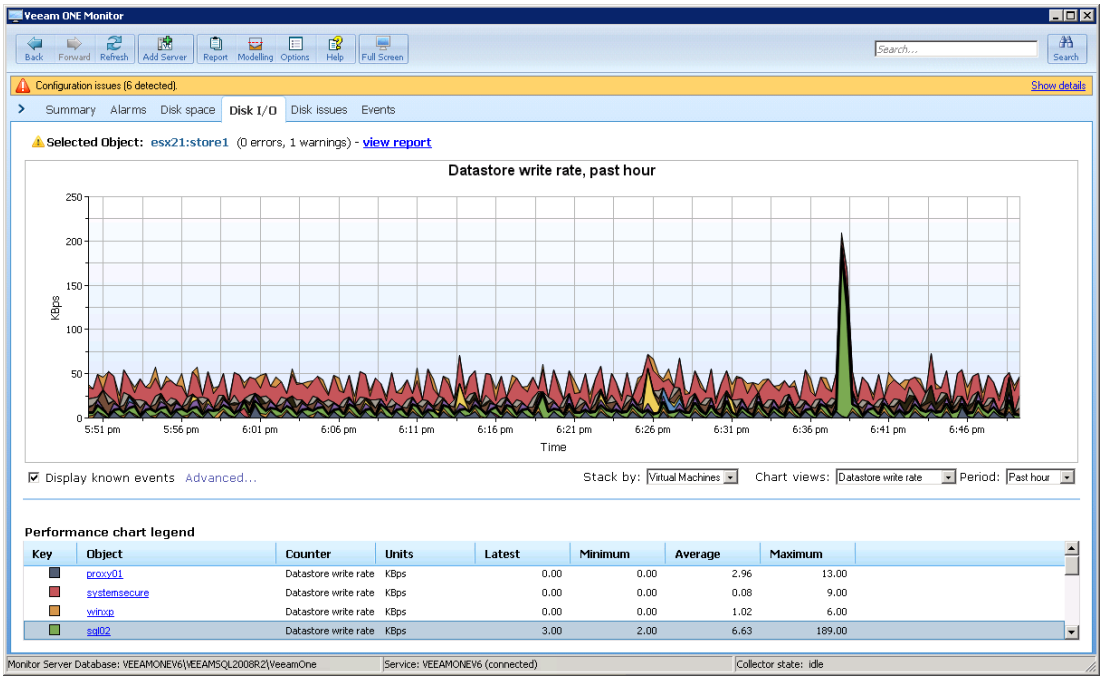
The **Disk Space** chart comes with a predefined chart view that groups disk space counters. The following table includes provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
Datastore Space Usage	Datastore free space	B	Amount of free space on the datastore.
	Datastore provisioned space	B	Amount of storage allocated for datastore or VM usage. Files on the datastore and the VM cannot expand above this size.

Disk I/O Chart

The chart is available for datastores and datastore clusters only.

The **Disk I/O** chart displays real-time datastore load information. This tab uses stacked graphs to let you see actual cumulative load on a particular datastore. Use the **Stack by** list to display graphs for either the VMs or ESX(i) hosts which use the selected datastore. If you select the top **Datastore** parent object, you will also be able to stack graphs by all available datastores.



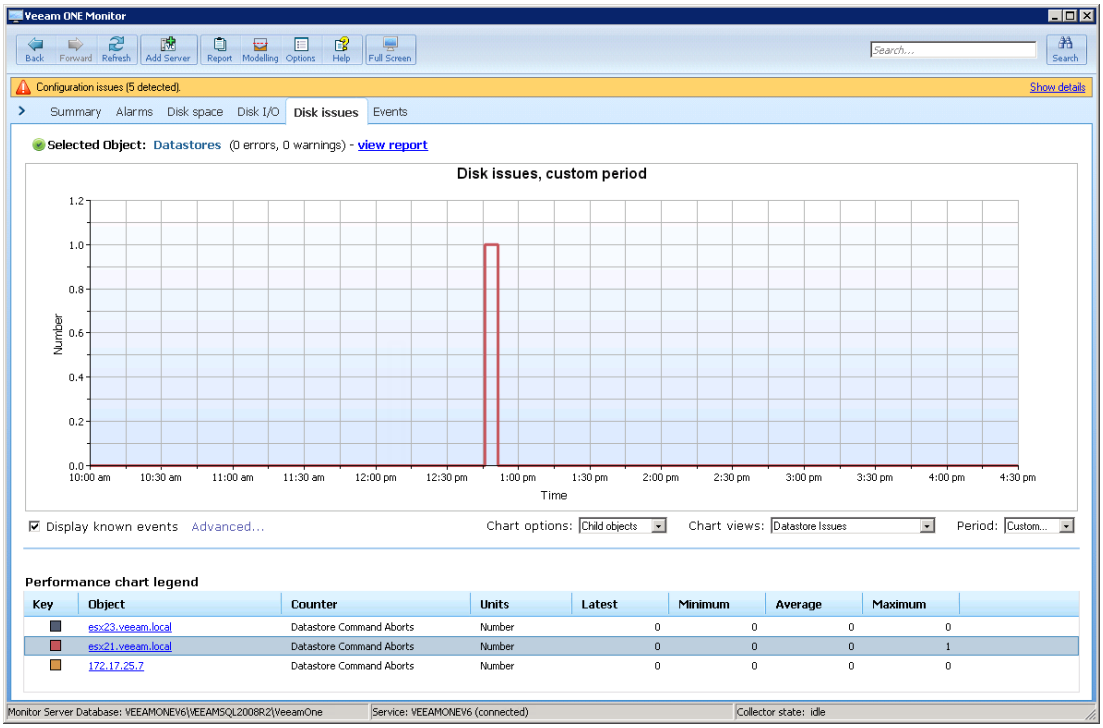
The **Disk I/O** chart comes with a number of predefined chart views. The following table includes information on counters used in predefined views and provides a description for each counter.

Chart View	Measurement Unit	Description
Datastore read rate	MBps	Rate at which data is read from the datastore.
Datastore write rate	KBps	Rate at which data is written to the datastore.
Datastore read I/O	Number	Number of times data was written to the disk by all VMs residing on the datastore.
Datastore write I/O	Number	Number of times data was read from the disk by all VMs residing on the datastore.
Datastore I/O	Number	Average number of commands issued per second to the storage device by the adapter,
Datastore read latency	Millisecond	Average amount of time taken to a read operation from the datastore (from the perspective of an ESX(i) host).
Datastore write latency	Millisecond	Average amount of time taken for a write operation to the datastore (from the perspective of an ESX(i) host).

Disk Issues Chart

This chart is available for datastores and datastore clusters only.

The **Disk Issues** tab displays information on the number of disk bus resets and disk command aborts that have occurred in the defined interval.



The **Disk Issues** chart comes with a predefined chart view that groups disk issues counters. The following table includes provides a description for each counter.

Chart View	Counter	Measurement Unit	Description
Datastore Issues	Datastore bus resets	Number	Number of aborted SCSI commands.
	Datastore command aborts	Number	Number of SCSI bus reset commands.

Customizing Performance Charts

Veeam ONE Monitor provides wide opportunities for customizing performance charts so that they display performance data for specific objects, within a necessary time intervals and using required performance counters.

Selecting Objects to Chart

When viewing performance data, you can select to display the total of the object performance data, view data separately for every child of the selected virtual infrastructure object (for example, all hosts in the cluster), or analyze performance information of VMs under the selected virtual infrastructure level.

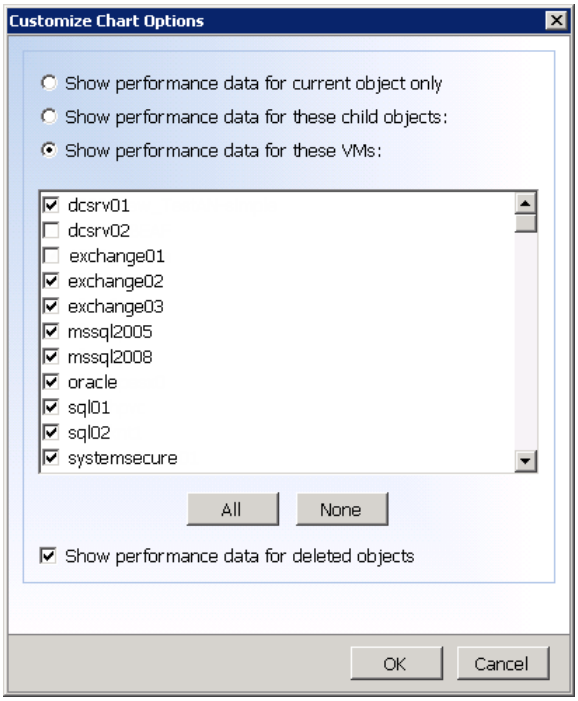
To choose objects for which performance data should be displayed, use the **Chart options** list above the performance chart legend.

- To view the aggregate statistics of the object components performance data, select **Current object** (this option is selected by default).
- To chart a desired scope of components from the list, select **Child objects**. Only direct children of the selected virtual infrastructure object that are currently available are regarded.

If you want to display statistics for chosen child objects, select **Custom view** and choose the **Show performance data for these child objects** option in the **Customize Chart Options** window. Select check boxes next to child objects that should be included in the chart scope. To include in the chart details on objects that are no longer available in the virtual hierarchy (deleted objects), select the **Show performance data for deleted objects** check box.

- To chart a desired scope of VMs, select **Child VMs**. Both direct and indirect children of the selected virtual infrastructure object that are currently available are regarded.

  If you want to display statistics for chosen child VMs, select **Custom view** and choose the **Show performance data for these VMs** option in the **Customize Chart Options** window. Select check boxes next to VMs that should be included in the chart scope. To include in the chart details on objects that are no longer available in the virtual hierarchy (deleted objects), select the **Show performance data for deleted objects** check box.



Note The legend pane displays only those objects for which data across the selected time interval is available.

Selecting Time Interval

Working with performance chart, you can select the time interval over which the performance data should be displayed. The available options are real-time information (past hour), past day, week, month, year, or custom time range. The custom option allows varying the time interval within any of the last 100 hours, days, or weeks, as well as specifying any from/to period.

To select a necessary time interval, in the **Period** list above the performance chart legend, select **Past hour**, **Past day**, **Past week**, **Past month**, or **Past year** . To define a custom time range, select **Custom**.

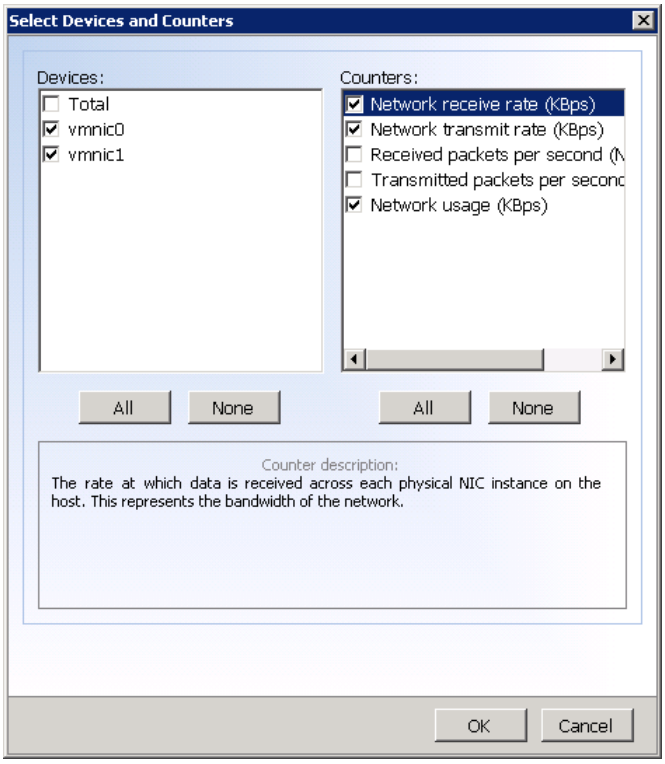
Once you change the time interval value, the time scale (X-axis) of the performance chart and the chart will change respectively.

Selecting Chart Views and Performance Counters

Every performance chart comes with a set of predefined chart views that that logically group related performance counters. You can switch between chart views using the **Chart view** list above the chart legend.

To find out specific performance metrics of a corresponding resource, you can also select performance counters that you want to monitor on the chart. To select performance counters:

1. In the inventory pane, select the object you want to monitor.
2. From the **Chart views** list above the chart legend pane, select the **Custom view** option to bring up the **Select Devices and Counters** window.



3. In the left pane of the window, select available resource device(s) and/or the total of resources to be displayed on the chart.
4. In the right pane of the window, select counter(s) to view. To see the list of possible metrics, see sections with chart descriptions.

Tip When you select a counter, its description appears in the lower pane of the window.

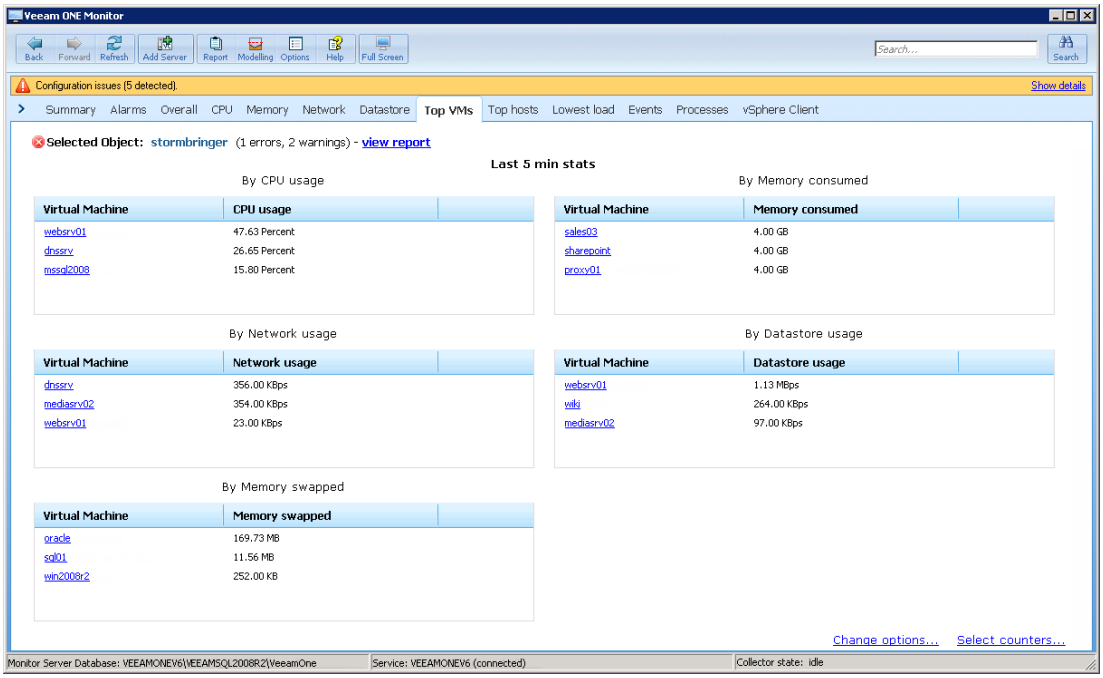
Using Top VMs, Top Hosts and Lowest Load Tabs

Depending on the level of virtual infrastructure object currently selected in the inventory pane, Veeam ONE Monitor allows you to define VMs or hosts consuming the most or the least resources at the moment.

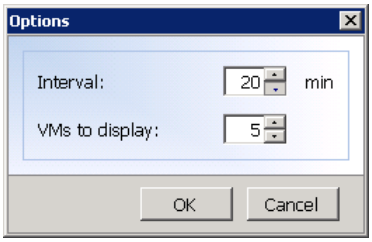
The **Top Hosts** tab displays the top host consumers of CPU, memory, datastore, network and swap. It provides statistics for a selected number of hosts taking most of the resources over the last N minutes.

The **Top VMs** tab displays the top VM consumers of CPU, memory, datastore, network and swap users. It provides statistics for a selected number of VMs taking most of the resources over the last N minutes.

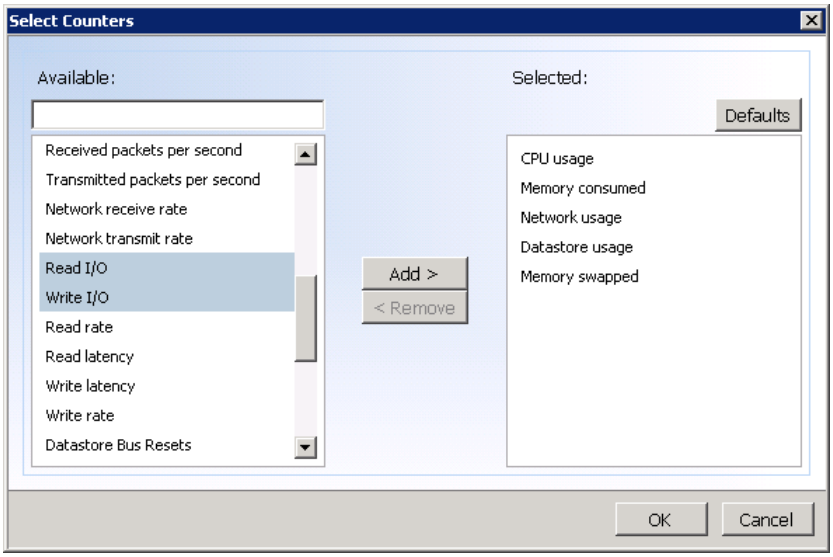
The **Lowest Load** tab allows you to identify the least loaded ESX(i) hosts, taking into consideration consumed resources of CPU, memory, datastore, network and swap. This helps you to decide to which ESX(i) hosts you can place new VMs or move existing ones.



To define the number of top and lowest consumers and the time interval, click the **Change Options** link in the lower right corner of the window.



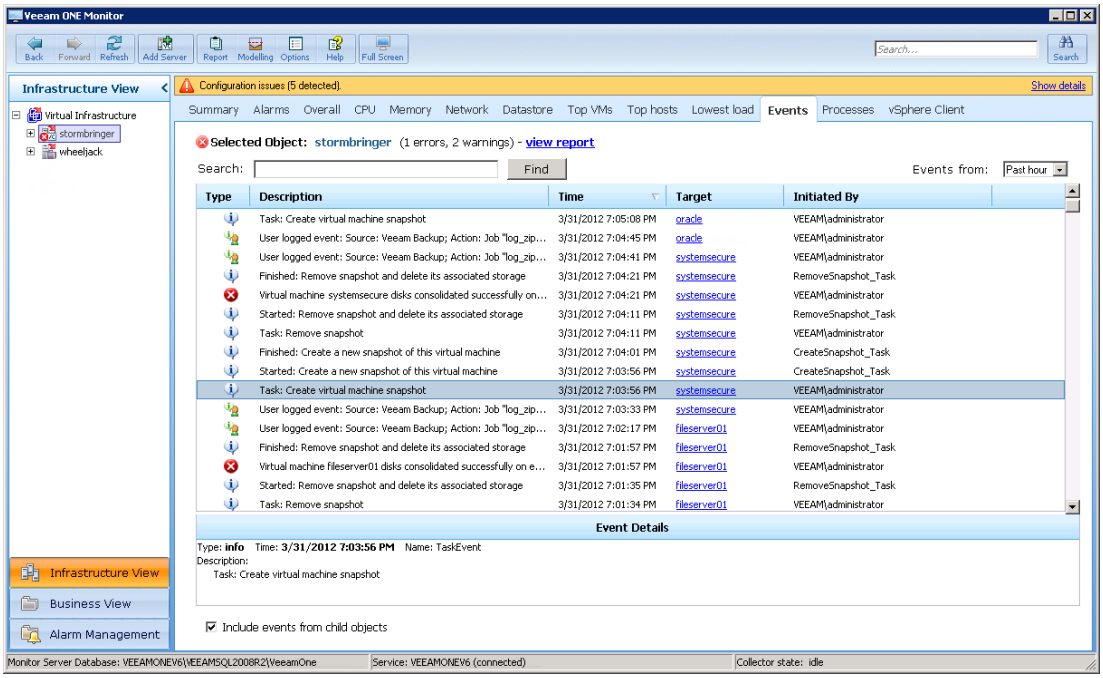
You can also define your own conditions for the top and lowest resource consumers. To do so, click the **Select counters** link in the lower right corner of the window. In the **Select counters** window, choose metrics according to which Veeam ONE Monitor should select top hosts, top VMs or objects with the lowest load.



Monitoring Events

The **Events** dashboard of Veeam ONE Monitor displays data on events that occurred at different levels of virtual environment. For an overview on monitored events, refer to Events the section.

To view the list of events for a specific level, select it in the inventory pane and click the **Events** tab:



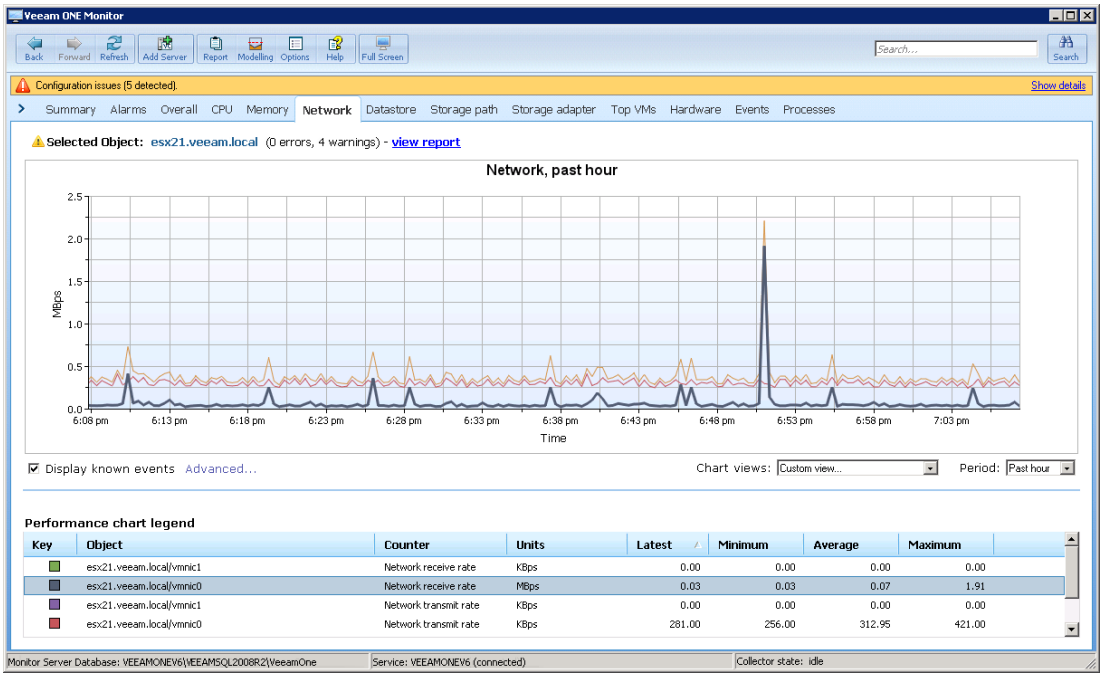
For every event, the following information is provided: event type (*User*, *Info*, *Warning* or *Error*), short description, time of occurrence, event target and the object that initiated the event. To view a detailed description of an event, click it in the list, and the event data will be displayed in the **Event Details** pane of the **Events** dashboard.

By default, the **Events** view contains data on the past hour. To change the time range for displayed event, select a necessary time interval in the **Events from** list.

In addition to viewing events for a specific virtual infrastructure object, you can also display events for its child objects: select the **Include events from child objects** check box at the bottom of the **Event Details** section.

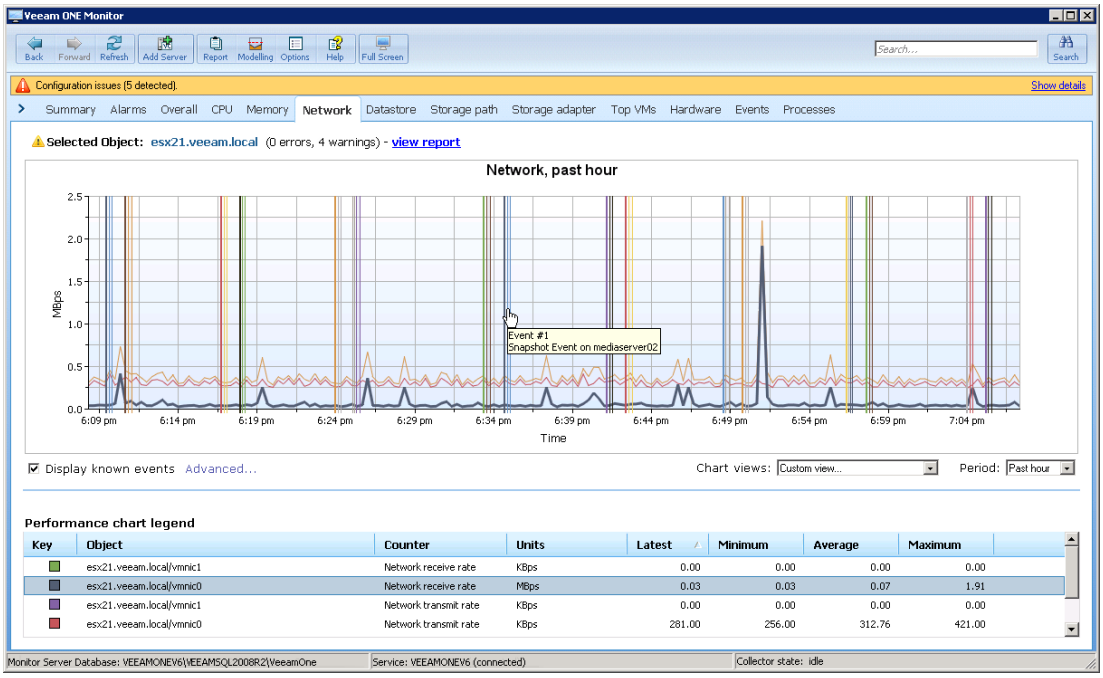
Viewing Events in Performance Charts

To give you background information on resource utilization, Veeam ONE Monitor displays top resource-consuming events in the performance charts. This allows you to trace what events have caused changes in the performance behavior (for example, see what was the reason for a steep increase of the network resources usage).



To display recent events in the performance graph, select the **Display known events** check box below the performance chart.

Events are presented as vertical lines crossing the performance graphs. To learn more about an event, move the mouse cursor over it to see a tooltip, or click the corresponding line in the graph. As a result, the **Event description** window will be displayed.



Veeam ONE Monitor displays the following types of events on performance charts: live migration, snapshot creation events, snapshot removal events and Veeam Backup events. To select what type

of events you want to display in the performance chart, click the **Advanced** link next to the **Display known events** check box and select the events you need to view.

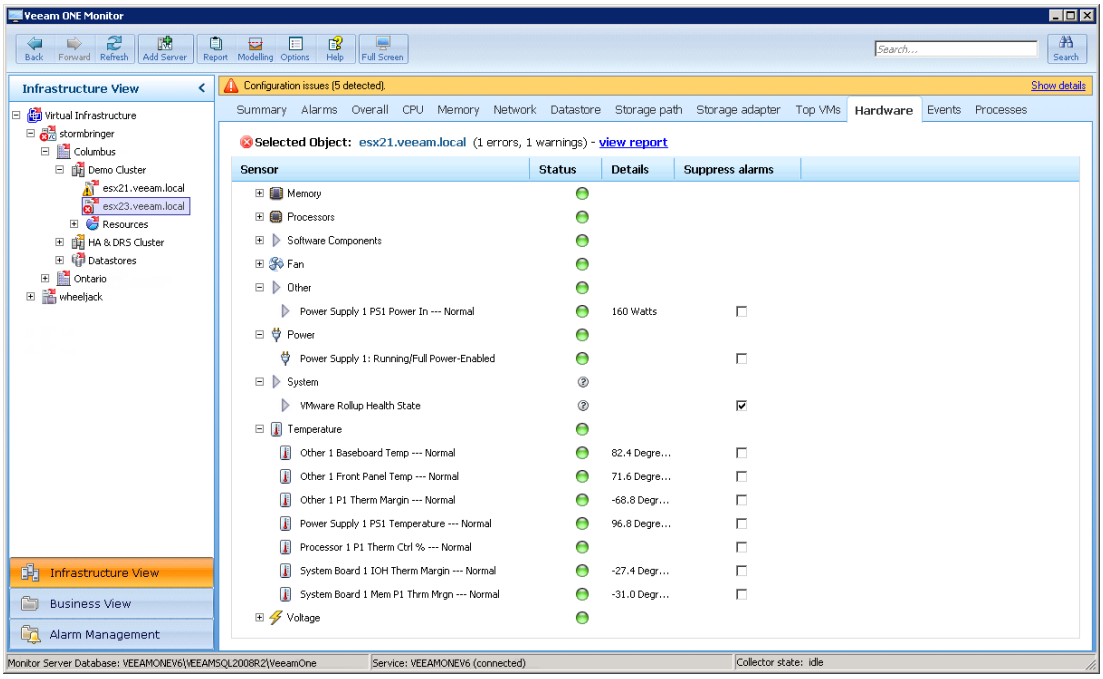
Note The **Display known events** option is available only for time intervals not greater than 3 days. You will not be able to view events in the performance graph if a longer time interval is selected.

Monitoring Host Hardware State

In addition to topology, events and performance of your virtual environment, Veeam ONE Monitor allows you to monitor the health of ESX(i) host hardware components. Veeam ONE Monitor collects sensor details for chassis, memory, power, processors, software components, storage, system, watchdog, fan, temperature, voltage and other components.

To monitor the health state of host hardware components, select the necessary host in the inventory pane and open the **Hardware** tab.

The color of the status indicator changes depending on the state of a corresponding component. The *green* color means the subsystem is functioning properly; *yellow* and *red* colors alert that the performance threshold is exceeded, performance has gone down or the subsystem has stopped operating. Threshold values for the state of hardware components are read from vCenter Server alarm definitions.



You can suppress alarms on specific components. To do so, select check boxes next to necessary sensors in the **Suppress alarm** column.

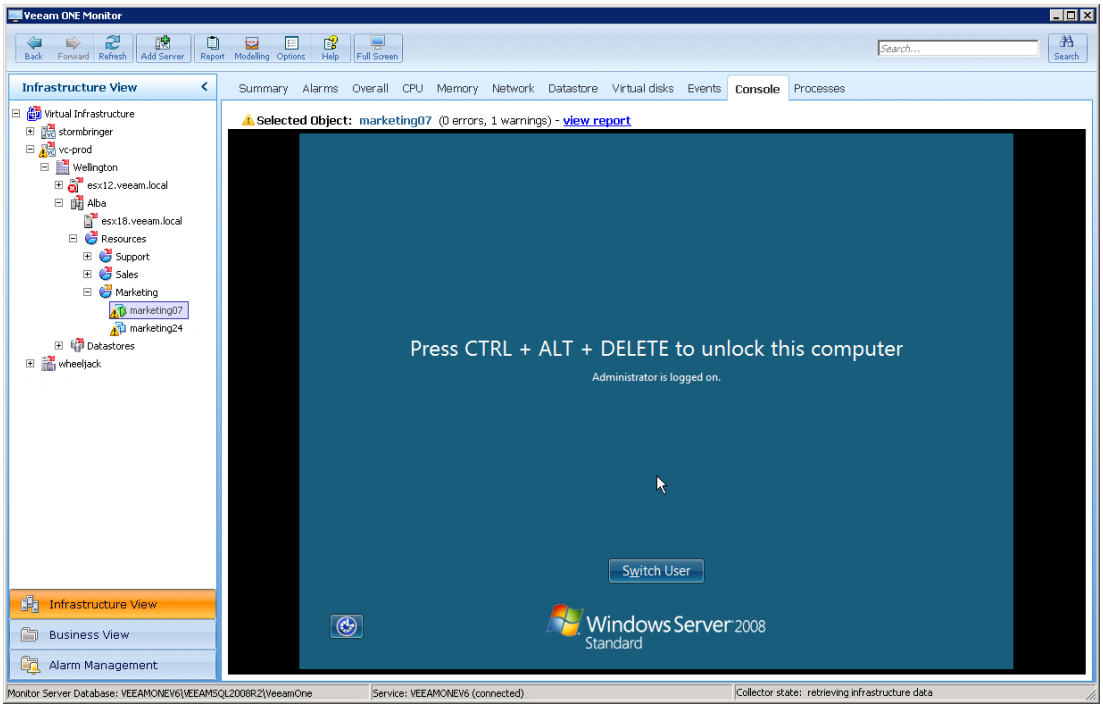
Accessing VM Console

To get complete visibility of the VM state and troubleshoot VM performance issues, you can access the VM console right from the Veeam ONE Monitor interface. Thus, you can easily isolate the root cause of VM performance problems or perform management tasks – for example, restart an unresponsive VM.

This possibility requires no additional software installed on the Veeam ONE server and is available for both Window-based and Linux-based OS's.

Note To be able to access the VM console, the user must be either a member of the *Veeam ONE Administrators* group, or must have sufficient privileges on the vCenter Server.

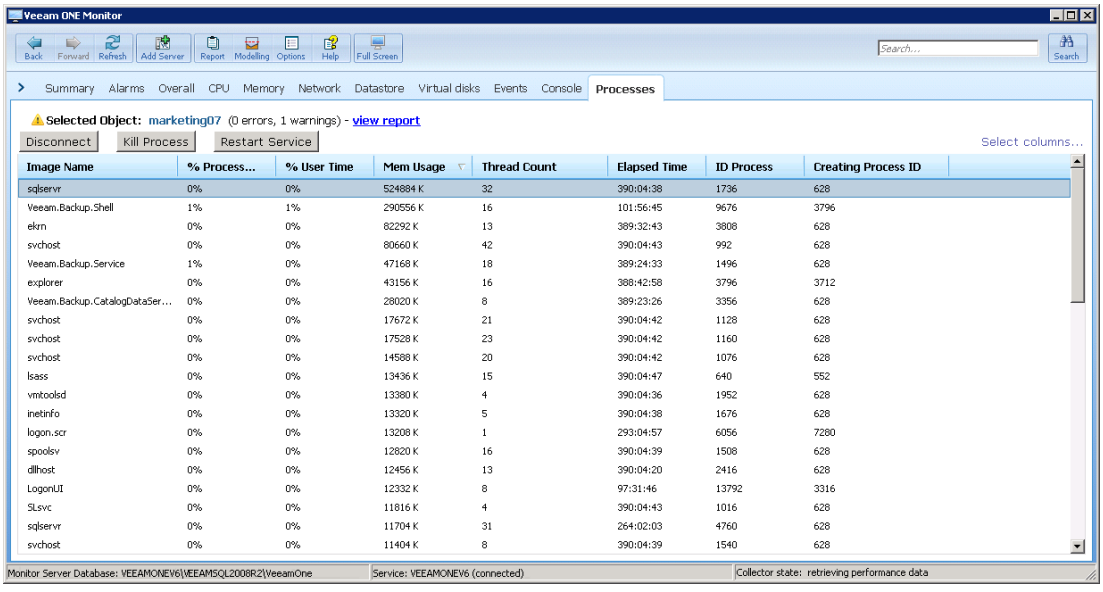
To access a VM console, select a necessary virtual machine in the inventory pane and click the **Console** tab.



Viewing In-Guest Processes

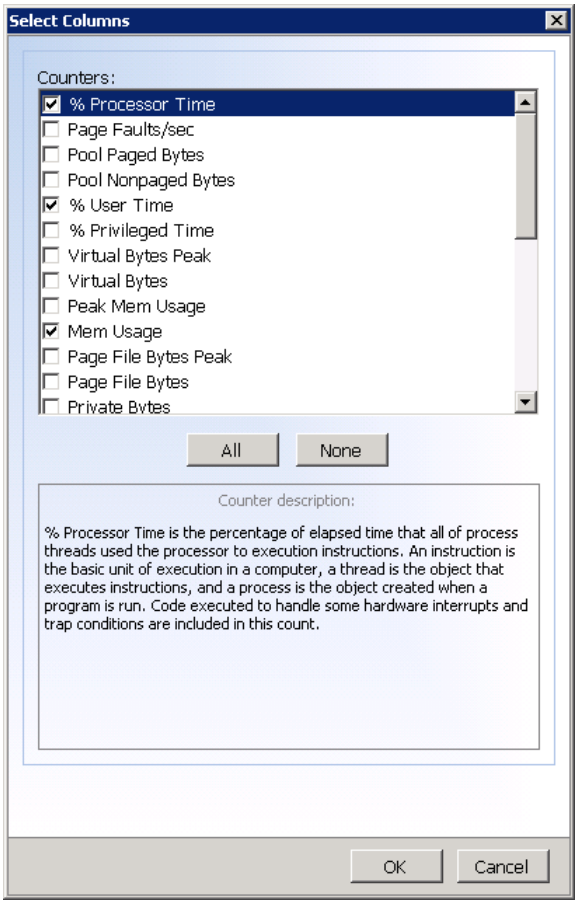
You can view and control processes and services that are currently running inside a virtual machine, ESX host or vCenter Server – directly in the Veeam ONE Monitor console.

To view the list of processes, select a necessary object in the inventory pane and open the **Processes** tab. Please note that you will have to provide OS authentication credentials (user name and password) to view running processes.



Every process is described with a set of counters that are presented as column headings. You can add or remove counters to monitor running processes: click the **Select columns** link in the upper right corner of the **Processes** dashboard. In the **Select columns** window, select check boxes next to counters you want to display.

To view a detailed description of a counter, click it in the **Counters** list, and a description will be displayed in the lower pane of the window.



Using the **Processes** tab, you can end unwanted processes running on the VM or restart running service.

- To end a process, select it in the list and click the **Kill process** button or right-click a necessary process and select **Kill process** from the shortcut menu.
- To restart a service, click the **Restart service** button or right-click a necessary service and select **Restart service** from the shortcut menu.

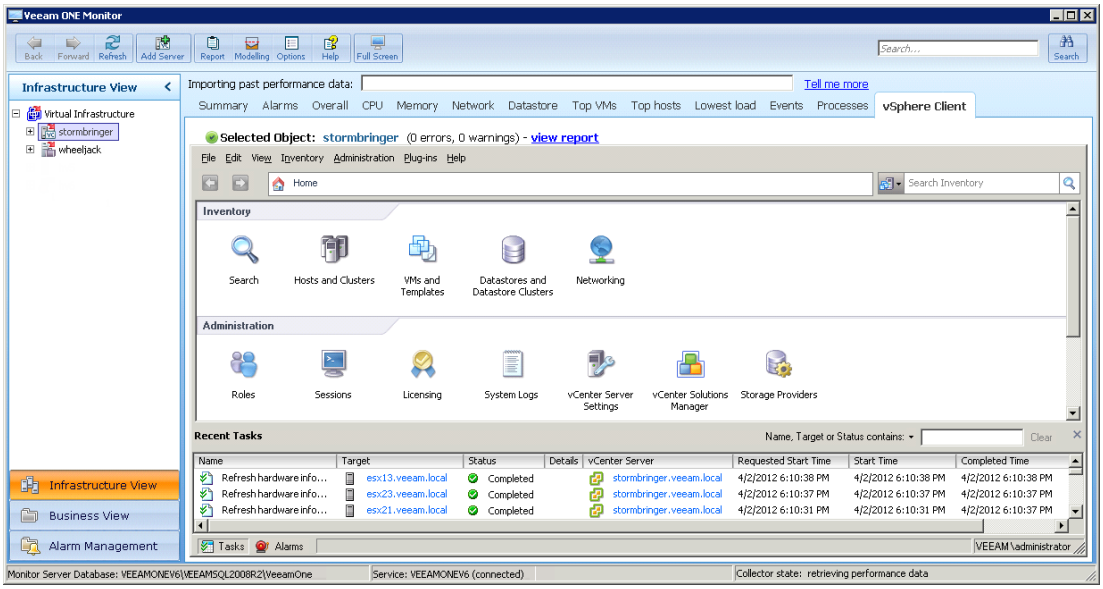
Note The possibility to view and manage processes and services is available only for VMs that have VMware Tools installed.

Connecting to vSphere Client

As additional monitoring, control and management options, Veeam ONE Monitor allows you to run vSphere Client from the main application window.

To start vSphere Client, select the upper level of your virtual infrastructure (either a vCenter Server or a standalone ESX(i) host) in the inventory pane and click the **vSphere Client** tab. Alternatively, you can right-click the vCenter Server node in the inventory pane and select **Open with VIClient** from the shortcut menu.

As a result, the vSphere Client will be loaded right in the main window of Veeam ONE Monitor.



Note This possibility is available only if vSphere Client is installed on the machine where the Veeam ONE Monitor Client runs. If you do not have vSphere Client installed, click the **Download VI client** link in the information pane.
To be able to log in to the vSphere Client automatically, the user should be a member of the *Veeam ONE Administrators* group. To access the vSphere Client, Veeam ONE Monitor will use credentials that were provided when a vCenter Server was connected. Members of the *Veeam ONE Users* group cannot log in to the vSphere Client automatically – they must enter access credentials manually.

Generating Reports

To obtain a point-in-time view of your virtual environment, you can create reports right from the Veeam ONE Monitor console. For generating reports, Veeam ONE Monitor uses instrumentation of Veeam ONE Reporter. You can generate the following types of reports containing virtual environment data:

- **Infrastructure reports** provide inventory configuration information, including all vCenter servers, clusters, hosts, VMs, datastores, and networks in your virtual environment. The reports are based on the **Infrastructure Overview** template from the Veeam ONE Reporter **VMware overview** report pack.
- **Performance reports** provide performance history and include CPU, Memory, Disk and Network counters for the selected virtual infrastructure level. The reports are based on performance templates from the Veeam ONE Reporter **VMware monitoring** report pack. The performance history is displayed for the last week (or for another period that is set in the template).

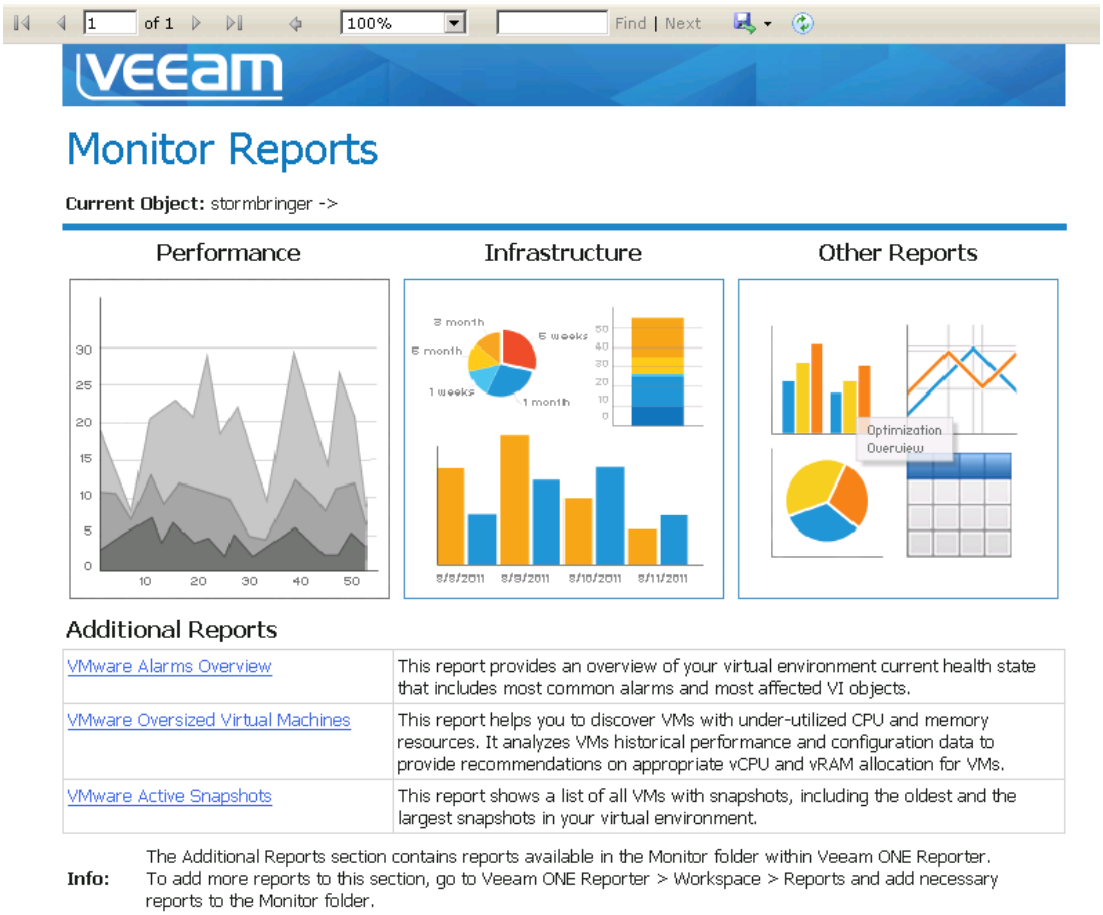
- In addition to infrastructure and performance reports, you can also generate any other custom reports for your virtual environment. To learn more about working with Veeam ONE Reporter, refer to the Veeam ONE Reporter section.

To create a report, do one of the following:

- Select the necessary virtual infrastructure level in the virtual infrastructure tree and click the **Report** button on the toolbar.
- Right-click the necessary virtual infrastructure level in the virtual infrastructure tree and select **Reports** from the shortcut menu.
- Select the necessary virtual infrastructure level in the virtual infrastructure tree and click the **view report** link at the top of the information pane. For your convenience, the **view report** link is available on all dashboards – so you can easily trigger reports from any place of the console.

Veeam ONE will open the landing page where you can select what type of report you want to generate. Note that depending on the type of selected virtual infrastructure level, some reports may be unavailable.

Click the **Performance** or **Infrastructure** section to generate a performance or infrastructure summary report for the selected virtual infrastructure level. Click the **Other Reports** section to open the Veeam ONE Reporter console.

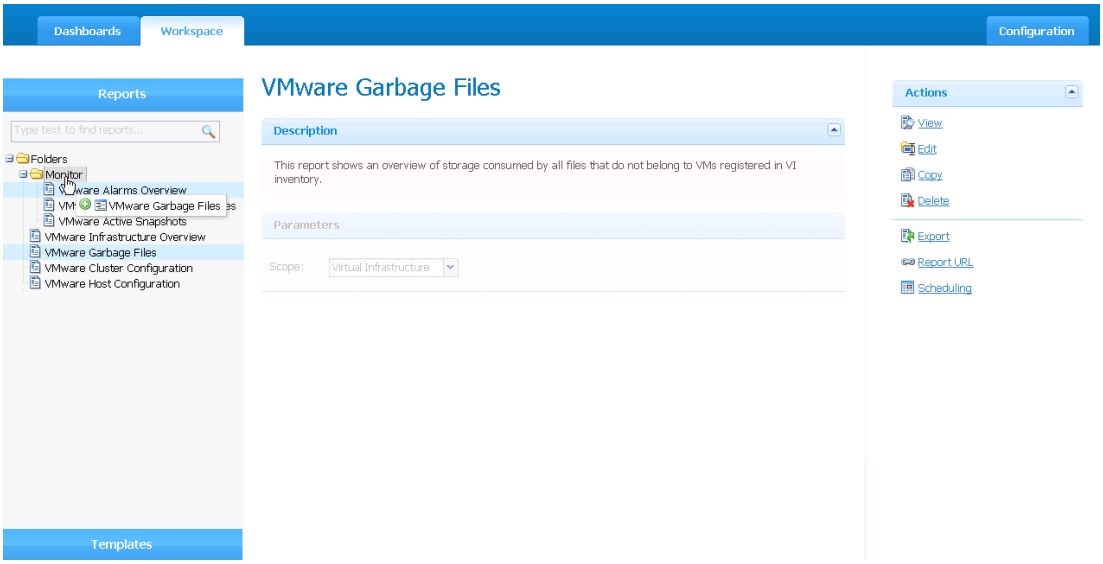


Adding Links to Reports

If necessary, you can add quick links to other reports to the **Additional Reports** section on the landing page. This can be useful if you need to periodically create the same set of reports for various objects in your virtual infrastructure.

To add one or more links to reports to the landing page, follow the next steps:

1. In the Veeam ONE Reporter console, go to the **Workspace** section.
2. Open the list of reports. If necessary, adjust existing reports to meet your requirements or create new reports.
3. Drag and drop the necessary report to the **Monitor** folder.



Links to reports that you moved to the **Monitor** folder will be available in the **Additional Reports** section on the reports landing page.

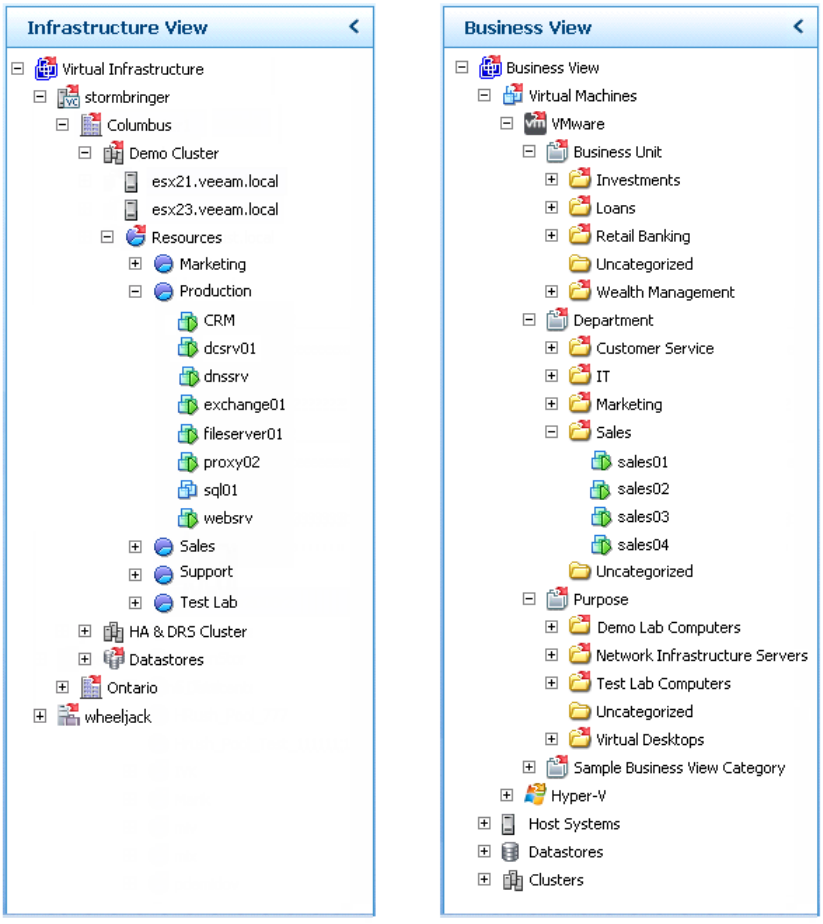
For example, if you want to track files that do not belong to VMs registered in the VI inventory, you can add the **VMware Garbage Files Overview** report to the **Monitor** folder in Veeam ONE Reporter. As a result, the link to this report will be displayed on the landing page. Thus, you will not need to switch to the Veeam ONE Reporter console every time you need to create the report. Instead, you will be able to generate the report with just one click.

MONITORING BUSINESS VIEW GROUPS

Veeam ONE Monitor lets you to monitor and alert of your virtual infrastructure presented from the technical perspective (that is, in standard terms of VMware vSphere hierarchies), and from the business perspective (that is, based on your company needs and priorities). Such business view monitoring is enabled due to categorization capabilities provided by Veeam ONE Business View.

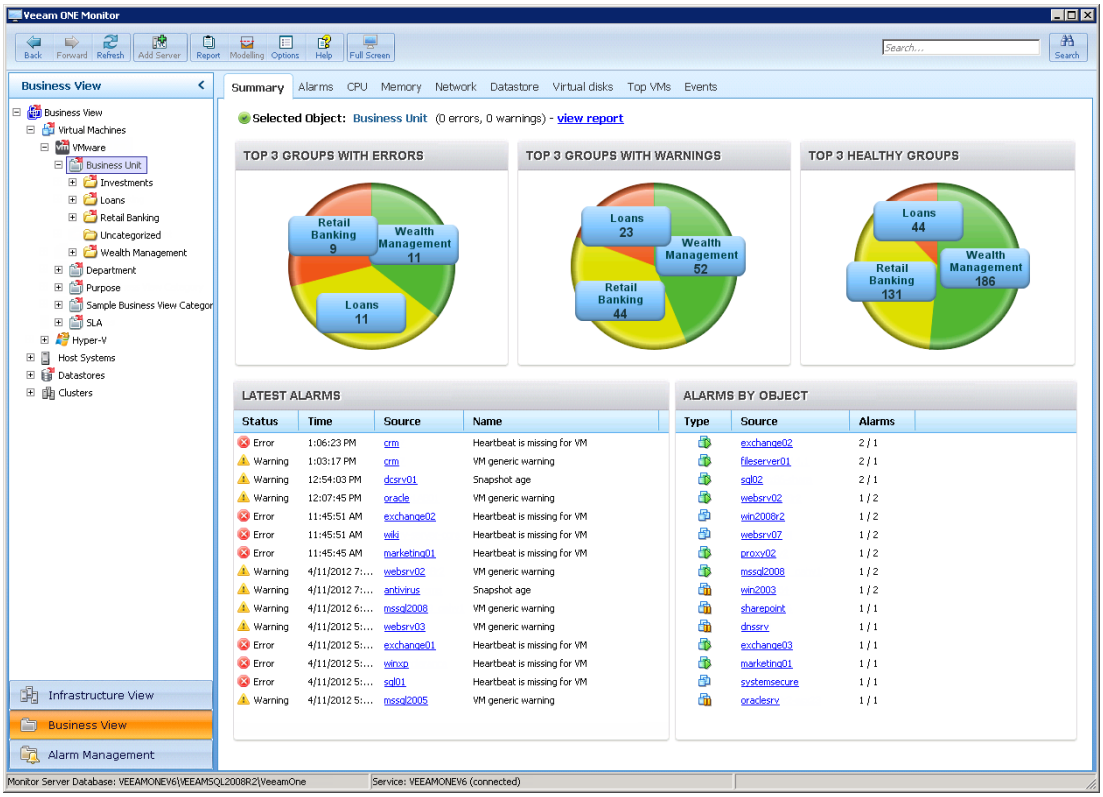
Veeam ONE Business View lets you categorize virtual infrastructure objects – VMs, hosts, clusters and datastores – according to constructs of your business. You can group your virtual infrastructure objects by such criteria as business unit, department, purpose, SLA and others. Veeam ONE integrates this business categorization data into Veeam ONE Monitor, and enables you to monitor, troubleshoot, resolve issues and report on business groups of virtual infrastructure objects.

To work with the business view of your virtual infrastructure, click **Business View** at the bottom of the inventory pane. You can now use Veeam ONE Monitor capabilities for business groups created for your virtual environment.



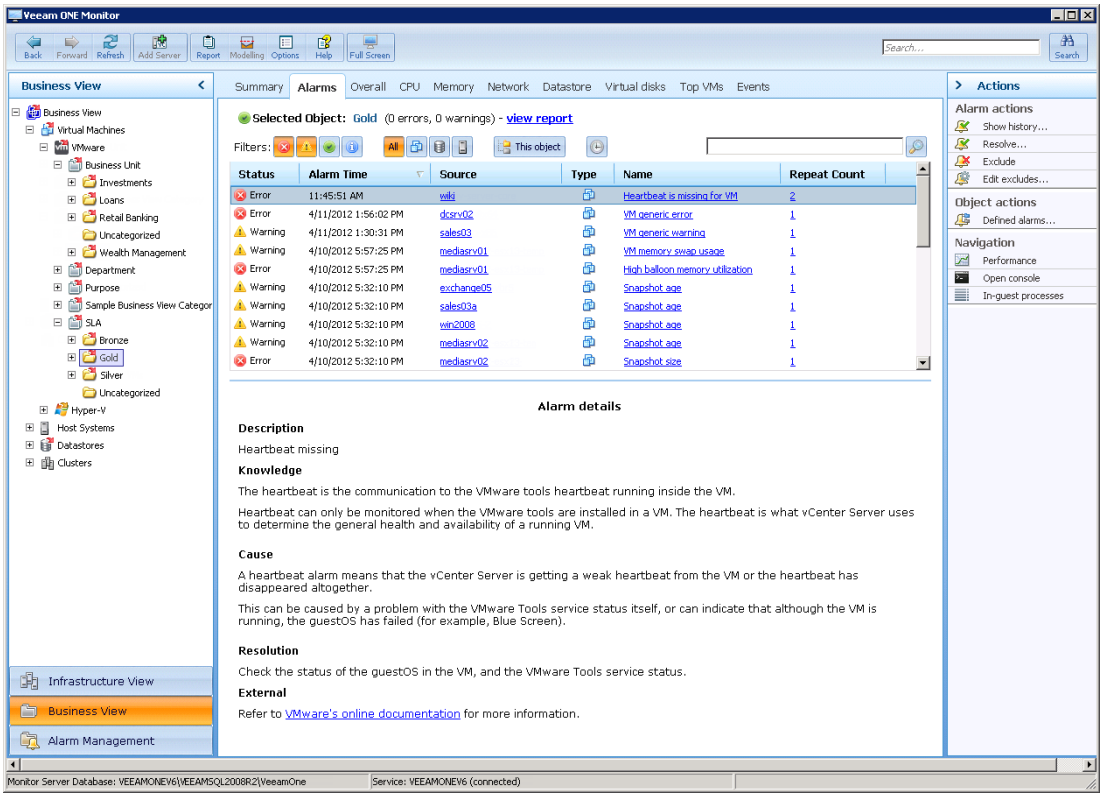
Viewing Summary Dashboards

Veeam ONE Monitor provides summary dashboards for business groups of virtual infrastructure objects. You can review the summary details for all VMs, hosts, clusters or storages in custom groups, see the latest alarms, and, if necessary, drill-down to the specific objects in the group for troubleshooting.



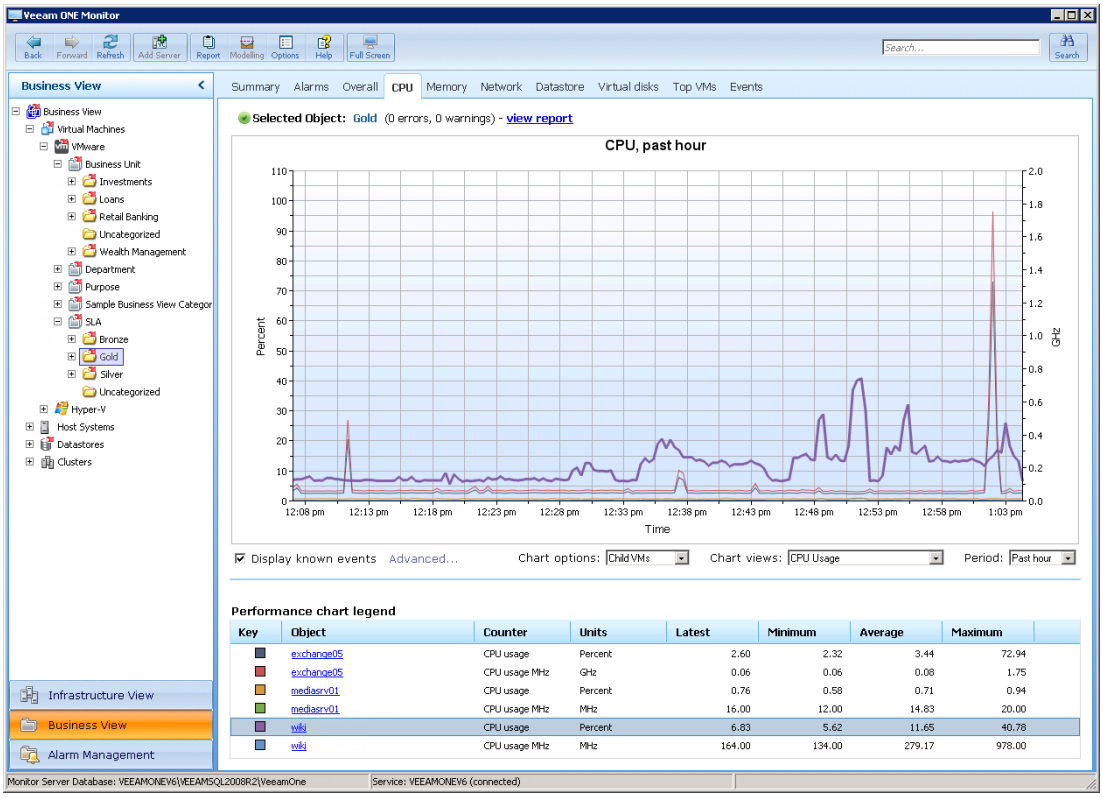
Creating and Managing Alarms for Business Groups

With Veeam ONE Monitor, you can create and manage alarms for business groups of virtual infrastructure objects. For example, you can group your virtual infrastructure based on the SLA criterion into three groups – *Gold*, *Silver* and *Bronze*. For each group, you can configure alarms with severity levels and thresholds corresponding to requirements of a specific SLA. This will help you enhance service delivery and guarantee that SLA requirements are met.



Viewing Performance Charts for Business Groups

You can view performance charts both for virtual infrastructure from the technical perspective, and for virtual infrastructure objects organized into business groups. You can view how objects in custom groups are performing, and identify if enough resources are allocated to them.



Creating Performance Reports for Business Groups

Veeam ONE Monitor enables you to create performance reports for business groups. For example, you can generate performance reports for SLA business groups, use them for SLA validation and even provide them to ensure SLA conditions are met.

VEEAM ONE REPORTER

OVERVIEW

Veeam ONE Reporter – a part of an integrated Veeam ONE suite – is a solution for documenting and reporting on your virtual environment. Veeam ONE Reporter allows you to automatically discover and collect information about your virtual environment, its components and configuration settings, and provide comprehensive visual reports for analysis, documentation and decision-making support, optimize resource utilization and track implemented changes.

Support for Heterogeneous Virtual Environments

Veeam ONE Reporter is designed for professional use in VMware vSphere and Microsoft Hyper-V environments. Report management capabilities for VMware vSphere and Microsoft Hyper-V virtual environments are available from a single Veeam ONE Reporter console.

ESX(i) Server and vCenter Compatibility

Veeam ONE Reporter is fully compatible with ESX 3.5, 4.0, ESXi 3.5, 4.0, 5.0 and VirtualCenter 2.5, vCenter Server 4.0, 5.0.

Powerful Information at Your Fingertips

Veeam ONE Reporter equips virtualization administrators with extensive reports and diverse widgets that depict every single aspect of your virtual environment, and cover such areas as configuration, performance, health and upgradability. Veeam ONE Reporter helps you stay in complete control of the virtual environment and be able to implement immediate changes.

Targeted Reporting

Veeam ONE Reporter enables multi-user access to specific reports, providing task-oriented reporting to varied user groups (management can access show back and performance reports, while virtualization administrators will appreciate VM right-sizing reports).

Ready-to-Use and Customizable Reports and Dashboards

Veeam ONE Reporter allows you to work with ready-to-use reports and dashboards or create and customize your own dashboards and reports. You can or create custom reports based on dozens of templates. Predefined widgets enable access to typical charts and graphs, allow you to quickly launch associated reports and facilitate decision making.

Agentless Data Collection and Low Resource Consumption

Veeam ONE Reporter features a convenient way of collecting virtual infrastructure data with collection jobs. You may schedule to collect virtual infrastructure data periodically by the defined time schedule or run collection jobs manually. Retrieved data is stored to the SQL database, enabling the user to select a necessary state of the virtual infrastructure and generate reports as of this state at any moment of time.

Veeam ONE Reporter collects virtual infrastructure data agentlessly putting no additional load on virtual servers.

Reporting in Visio, Excel, Word, PDF

Veeam ONE Reporter offers a wide variety of reports in Microsoft Visio, Microsoft Excel, Microsoft Word and Adobe PDF reports to present your environment from different viewpoints and in various profiles.

Scheduled Report Delivery

Veeam ONE Reporter provides automated report scheduling and distribution for those who need to obtain reports on a regular basis. You can schedule reporting for a single report or automate report creation and distribution for multiple reports included in a report folder.

Such automatically generated reports can be saved to a specific location or sent by email. Veeam ONE Reporter provides flexible scheduling configuration options – you can define what reports should be generated, specify a daily/monthly or any other custom reporting schedule, create a list of recipients, select to which location ready reports should be saved and so on.

Simplified Sharing

With Veeam ONE Reporter, you can share dashboards and widgets with you colleagues or embed dashboards, reports and widgets in intranet web portals, such as Microsoft SharePoint.

Integration with Veeam ONE Business View

Veeam ONE Reporter integrates with Veeam ONE Business View: it uses categorization data to build a business topology of your virtual infrastructure and makes your reports more useful – you can base your reports on business unit, department or purpose and other business categories – instead of just cluster, host and datacenter level portrayal.

Accessing Veeam ONE Reporter

To access Veeam ONE Reporter, you can do one of the following:

- You can access Veeam ONE Reporter directly from the Veeam ONE Monitor console. For more details, refer to the Generating Reports section.
- To access the Reporter console locally, on the server where Veeam ONE Web UI is installed, select **Start** > **All Programs** > **Veeam** > **Veeam ONE Reporter** from the Windows **Start** menu.
- To access the Reporter console remotely using your Internet browser, browse to the following address (assuming the default port 1239):

  http://<veeamone_server_name>:1239

When connecting to the Veeam ONE Reporter, you will receive a login prompt. To be able to access Veeam ONE Reporter, you need to provide credentials of user being a member of the *Veeam ONE Administrators* or *Veeam ONE Users* group (these are local groups created on the server where the Veeam ONE Server component is installed).

Note To be able to work with Veeam ONE Reporter, make sure the web console site is included in the *'Trusted sites'* zone.

Navigating Veeam ONE Reporter

The main Veeam ONE Reporter window is comprised of three working areas called **Dashboards**, **Workspace** and **Configuration**.

- The **Dashboard** represents a collection of prebuilt and custom dashboards. Every dashboard can contain one or more widgets. The widgets are visual modules that portray vital aspects of your virtual environment operation, containing such information as the health state, performance statistics and configuration of your infrastructure, as well as many other indicators. To learn how dashboard items are managed, check the Dashboards section.
- The **Workspace** is the place where you can work with saved reports and available templates. Reports provide an insight into historical performance, health, configuration and efficiency aspects associated with running and supporting virtualized environments. More details are found in the Workspace section of this guide.

- The **Configuration** section allows you to work with collection jobs, configure Veeam ONE Reporter settings and perform other administrative tasks. More details are found in the Configuring Veeam ONE Reporter section of this guide.

Data Collection Jobs

To collect virtual infrastructure data that will be used for reporting, Veeam ONE Reporter uses collection jobs. The collection job is a task for collecting data on one or a number of virtual infrastructure objects that is performed once or regularly, according to a defined schedule. During a collection job, Veeam ONE Reporter collects data from connected vCenter Servers or standalone ESX(i) hosts.

Every run of a collection job initiates a new job session; data collected at every session is stored to the Veeam ONE database. Collection jobs can be run manually or scheduled to be run at specific time with some periodicity. To learn more, see the Configuring Collection Jobs section.

CONFIGURING VEEAM ONE REPORTER

To start working with the Veeam ONE Reporter, you need to perform a number of steps for its initial configuration.

1. Review Veeam ONE Reporter configuration summary.
2. Configure and run collection jobs to collect data from virtual infrastructure servers. You can schedule data collection jobs or collect data from connected servers manually.
3. Check and adjust Veeam ONE Reporter settings.
4. Check and adjust data administration settings.
5. Check extension modules and update them if necessary.
6. Check the license and update it if necessary.

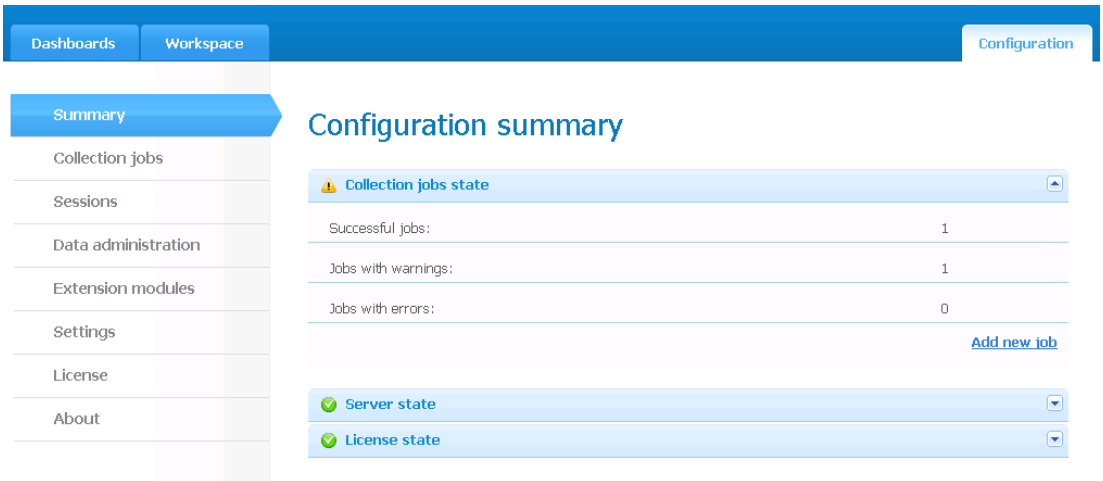
Configuring Veeam ONE Reporter is simple and straightforward process. It does not require elaborate configuration routines or expert technical knowledge. To access configuration settings of Veeam ONE Reporter, click the **Configuration** tab on the right.

Note To be able to access the Configuration section, a user must be a member of the **Veeam ONE Administrators** group. For details on Veeam ONE security scheme, refer to the *Veeam ONE Deployment Guide*.

Configuration Summary

Before you start configuring Veeam ONE Reporter settings, review the current configuration summary. Click **Summary** on the left of the **Configuration** view.

Tip The **Configuration summary** section gives you a quick overview of the current Veeam ONE Reporter configuration and possible configuration problems. If Veeam ONE Reporter detects any configuration problems, it will open the **Configuration summary** section every time when you switch to the **Configuration** view.



To view configuration summary details, expand the **Collection jobs state**, **Server state** and **License state** sections.

- The **Collection jobs state** section displays information about configured collection jobs and results of the latest sessions for the jobs. You can see the number of jobs that ran successfully and check how many jobs ended with warnings and errors.

If you do not have any collection jobs yet, click the **Add new job** link to add one or more collection jobs. Veeam ONE Reporter will open the **Collection jobs state** section of the **Configuration** view. For more information on configuring collection jobs, check the Configuring Collection Jobs section.

- The **Server state** section reflects the state of the scheduling service that is responsible for data collection as well as for scheduled report delivery.
- The **License state** section displays information about the installed license. To view license details or install a new license, click the **View details** link. Veeam ONE Reporter will open the **License** section of the **Configuration** view. For more details refer to the Managing Veeam ONE Reporter License section.

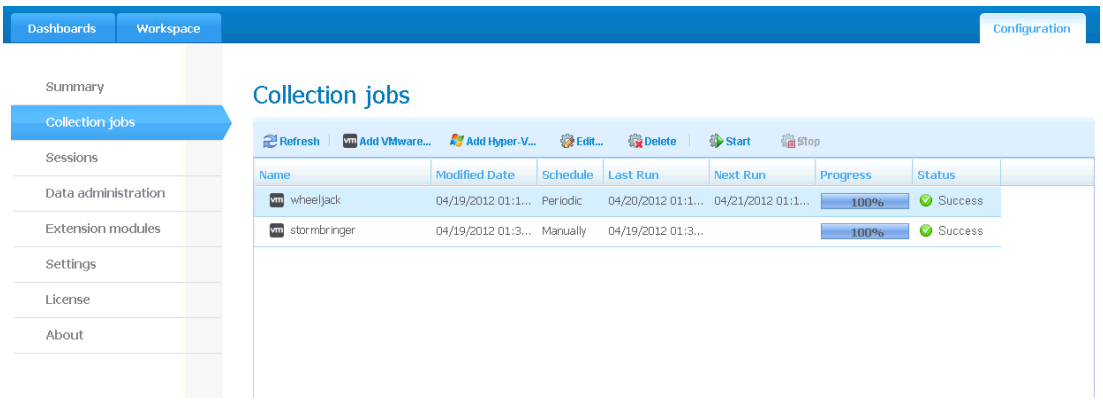
For your convenience, an icon displayed next to a section title displays the configuration state of a corresponding component. For example, if your license has expired and needs to be updated, an error icon will be shown in the **License state** section. Configuration summary icons allow you to quickly identify what configuration settings need to be adjusted or updated.

Configuring Collection Jobs

As one of the first steps for configuring Veeam ONE Reporter, you need to create and run collection jobs. To learn more about collection jobs, refer to the Data Collection Jobs section.

To work with collection jobs, click **Collection jobs** on the left of the **Configuration** view.

Note that if you have already connected the necessary vCenter Server as a default VMware server during Veeam ONE installation, or if you have previously connected vCenter Server(s) and ESX(i) hosts via the Veeam ONE Monitor or Veeam ONE Business View interface, you will already have collection jobs in the list. You might need to review these jobs and adjust their settings.



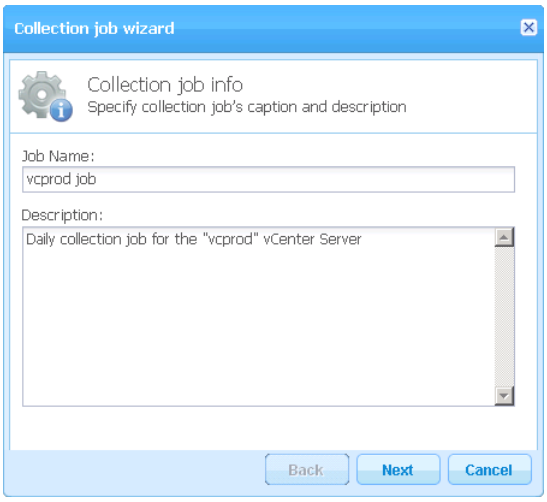
Adding a Collection Job

To add a new collection job, open the **Configuration** view and click **Collection jobs** on the left. Click the **Add VMware** button on the toolbar and follow the **Collection job wizard** steps:

Step 1. Specify general job settings

At the first step, you should specify general details for the job. Enter a name and description of the created job.

Note that the **Job name** field is obligatory — you will not be able to pass to the next step of the wizard if a name of the created job is not specified.



Step 2. Add VMware servers and define the job scope

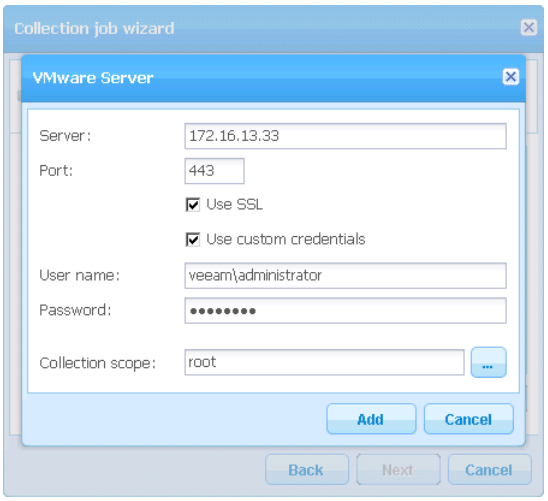
At the **VMware servers** step, you should add servers from which data should be collected. Veeam ONE Reporter allows you to add standalone ESX hosts and vCenter servers. If you add a vCenter server, you can collect data for all objects in its hierarchy starting from the root node, or for any specific object — datacenter, cluster and folder.

The scope of a collection job may cover a number of separate virtual infrastructure objects.

To add a VMware server to a job:

1. Click the **Add** button at the bottom.
2. In the **Server** field, enter the name of a vCenter Server or ESX(i) host.
3. In the **Port** field, specify the port number that Veeam ONE Reporter will use for communicating with the server.
4. The **Use SSL** option is used to encrypt transmitted virtual infrastructure data. Encryption affects CPU usage of VMware server slightly, but provides secure data transfer. If you do not want to use this option, clear the check box.
5. By default, to connect to the VMware server Veeam ONE Reporter will use credentials of the account under which the Veeam ONE Reporter console was launched. If this account does not have enough rights on the VMware server you are adding, select the **Use custom credentials** check box and provide the name and password of the user with sufficient rights on the added server. For details on permissions required to communicate with VMware servers, refer to *Veeam ONE Deployment Guide*.

Note If the user account has *Read-only* permissions on target objects, data for some objects (for example, license information and datastores) will not be collected.
To be able to collect license information, the user must have the *System.Read* and *Global.Licenses* privileges on the vCenter Server. To be able to collect datastore details, the user must have the *Datastore.Browse* privileges on target datastores.

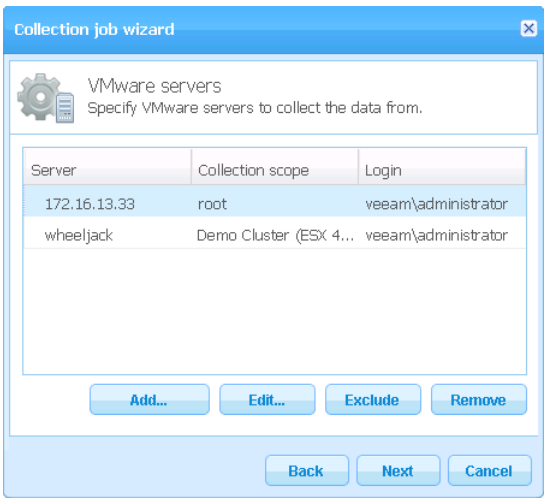


6. If you are adding a vCenter Server, you can change the collection scope. By default, the collection scope is set to "root", which means that the collection job will gather data about all virtual infrastructure objects in the vCenter Server hierarchy. If necessary, you can change the scope to the level of a specific datacenter or cluster. In this case, the collection job will gather data child virtual infrastructure objects of a particular datacenter or cluster.

   To change the collection scope, click the browse button to the right of the **Collection scope** field and select the necessary virtual infrastructure object from the list. Once you click the browse button, the Veeam ONE Reporter will verify the server name and user credentials you provided and will connect to vCenter Server. Connection to the server may take a while; please do not click any buttons or close the window before the vCenter Server hierarchy is displayed.

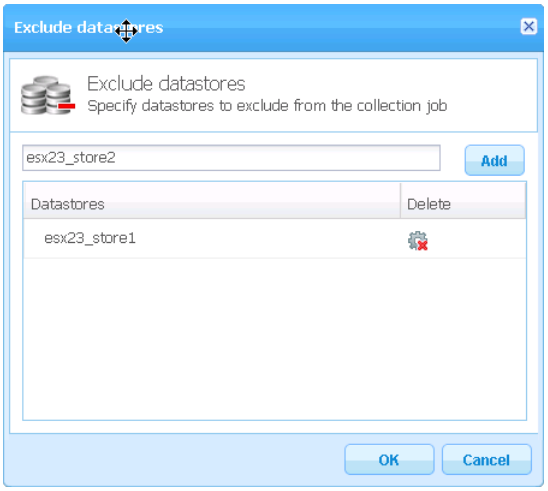
Note If you change the collection scope from "root" to any other level (for example, cluster or datacenter), information on some inherited settings will not be collected. In particular, Veeam ONE Reporter will not collect data about licenses installed at the root vCenter Server level and information about user permissions that are inherited from objects parent to the selected scope level.

7. Click the **Add** button to add a server to the collection job.



8. When you add a VMware server, Veeam ONE Reporter adds to the job scope all datastores connected to this server. If you do not want to collect data from some specific datastores (for example, datastores with ISO images), you can exclude these datastores from the collection job scope.

To exclude one or mode datastores from the job scope, select the necessary server in the **VMware servers** list and click the **Exclude** button. In the **Exclude datastores** section, make up a list of datastores that should be excluded.



9. Repeat steps 1-8 for all objects that you want to add to the job.

Once you have added all necessary VMware servers, review the list. Use the buttons at the bottom of the list to work with the servers that you have added to the job. To edit connection settings and the data collection scope for a particular server, select the server in the list and click **Edit**. To delete a server from the job scope, select the server in the list and click **Remove**.

Step 4. Specify collection job schedule

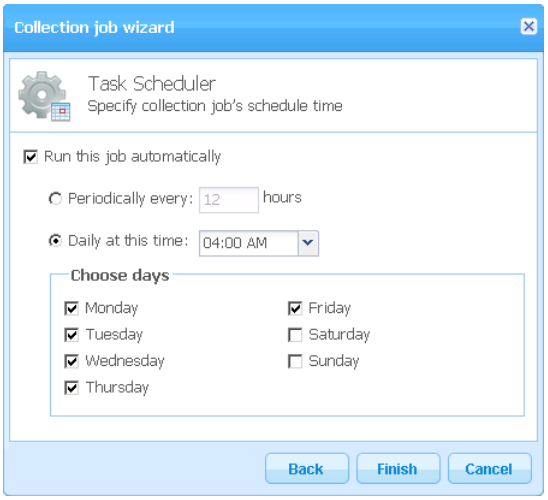
At the **Task Scheduler** step, you should define the time frame by which the created collection job should be executed.

If you are planning to run the created job manually, click the **Next** button to pass to the next step of the wizard. If you want the job to be run automatically, select the **Run this job automatically** check box and specify a necessary time schedule:

- To run the job at some time interval, select the **Periodically every… hours** option and specify the interval at which the job should be run.

Note The recommended interval between job sessions is 4 hours or more. If you schedule several jobs to run with a lower interval, the job schedules may overlap, which will lead to an extra overhead on the Veeam ONE database.

- To run the job every day at specific time, select the **Daily at this time** option and specify the time when the job should be executed. In the **Choose days** section below, select on which week days the job should be run.



Step 5. Finish working with the wizard

When you specify all necessary job settings, click **Finish** to add the collection job to the list.

Note If the job is scheduled to run periodically, Veeam ONE will start the job immediately after you save its settings.

Editing and Deleting Collection Jobs

To edit settings of a previously created job, select it in the list of jobs, click the **Edit** button at the top of the list or double-click the job. Edit the job settings as described in the Adding a Collection Job section.

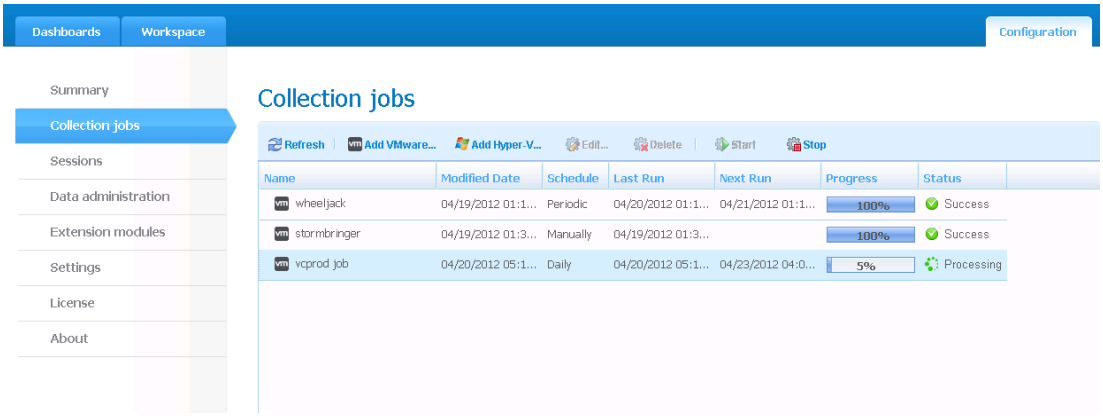
To delete a job, select it in the list and click the **Delete** button on the toolbar.

Note You cannot edit or delete a job that is currently being performed.

Running Collection Jobs

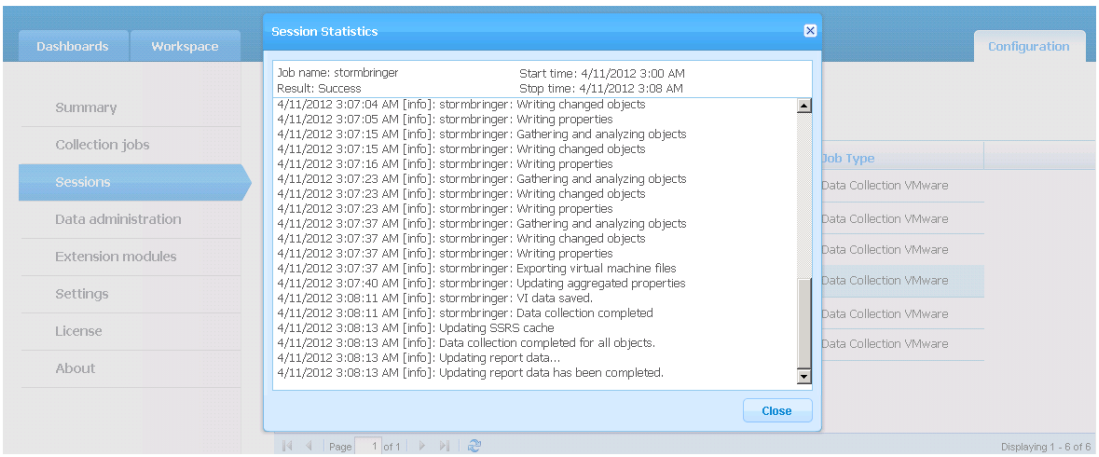
When you add a collection job, you should specify whether you want to run this job automatically or manually. If you set the job to run automatically, Veeam ONE Reporter will start the job according to the specified schedule. Otherwise, you will need to run the job manually.

To manually start/stop a collection job, select the job in the list and click the **Start**/**Stop** buttons at the top of the list.



Every run of a collection job initiates a new job session. To view details on job sessions, click **Sessions** on the left of the **Configuration** view.

The list of sessions provides data on all collection jobs that were started. Every session is described with the following data: name of the job for which a session has been initiated, start date and session status. To display detailed information on a specific session, click the session in the list.



Tip	To easily find a necessary session, you can sort the list of sessions by job name, start date or status. Click a corresponding column heading and choose to sort sessions in the ascending or descending order. Alternatively, you can click the column heading.

Configuring Veeam ONE Reporter Settings

The **Settings** section of the **Configuration** view allows you to customize general Veeam ONE Reporter settings. The application settings are grouped the following tabs:

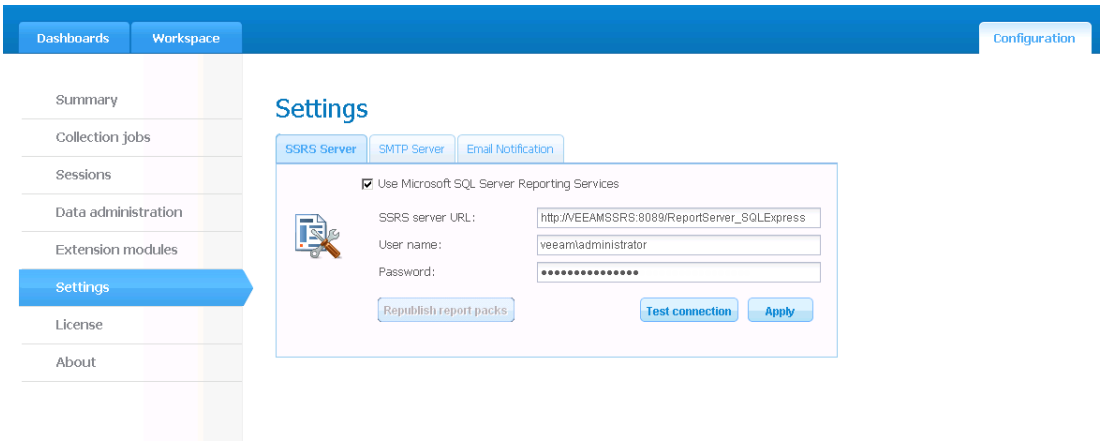
- On the **SSRS Server** tab, you can specify settings of the Microsoft SQL Server Reporting Services server that will be used for integration with Veeam ONE Reporter.
- On the **SMTP Server** tab, you can specify email settings that will be used for sending email notifications and reports.
- On the **Email Notifications** tab, you can specify general notification settings.

SSRS Server Settings

The **SSRS Server** tab allows you to specify access settings to the Microsoft SQL Reporting Services server that will be used for integration with Veeam ONE Reporter.

Note	Note that an SSRS server is an optional component in Veeam ONE deployment. If you already use SSRS servers for reporting, you can integrate them with Veeam ONE Reporter. If you do not have any configured SSRS servers, you can skip this step.

1. Select the **Use Microsoft SQL Server Reporting Services** check box.
2. In the **SSRS server URL** field, enter the address of the SSRS hosting server. The entry should be stipulated in the following format: *http://servername:port/VirtualDirectory*. To check if the URL is correct, launch the Reporting Services Configuration Manager and refer to the **Web Service URL** section.
3. Enter a user name and a password to connect to the SSRS server. To ensure your settings are accurate, we recommend adhering to the following format when entering username data: *DOMAIN\USERNAME* format.
4. To verify SSRS server settings, click the **Test Connection** button. Veeam ONE Reporter will display verification results on a summary screen.

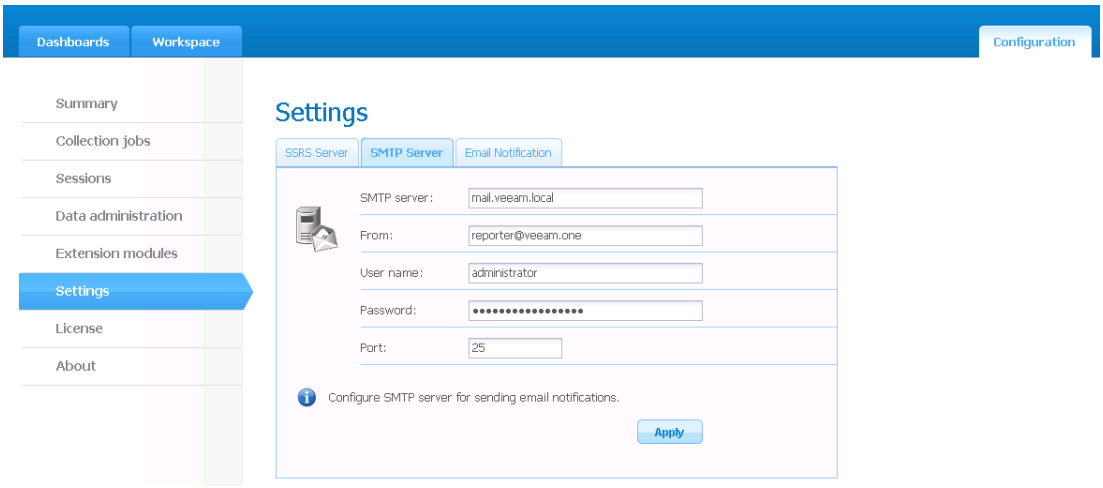


Note	If saved reports and folders are accidentally deleted, you can publish report packs back to Veeam ONE Reporter. To republish report packs, use the **Republish report packs** button.

SMTP Server Settings

The **SMTP Server** tab allows you to specify email settings that will be used for scheduled report delivery by email and notifications about collection job completion.

1. In the **SMTP Server** field, enter a full DNS name or IP address of the SMTP server that will be used for sending email messages.
2. In the **From** field, enter an email address that will appear as the sender.
3. If your SMTP server requires SMTP authentication, specify necessary credentials: user name and a password.
4. Change the port number if necessary.
5. After you are finished with configuring SMTP server, proceed to the **Email Notifications** tab to configure notification settings.



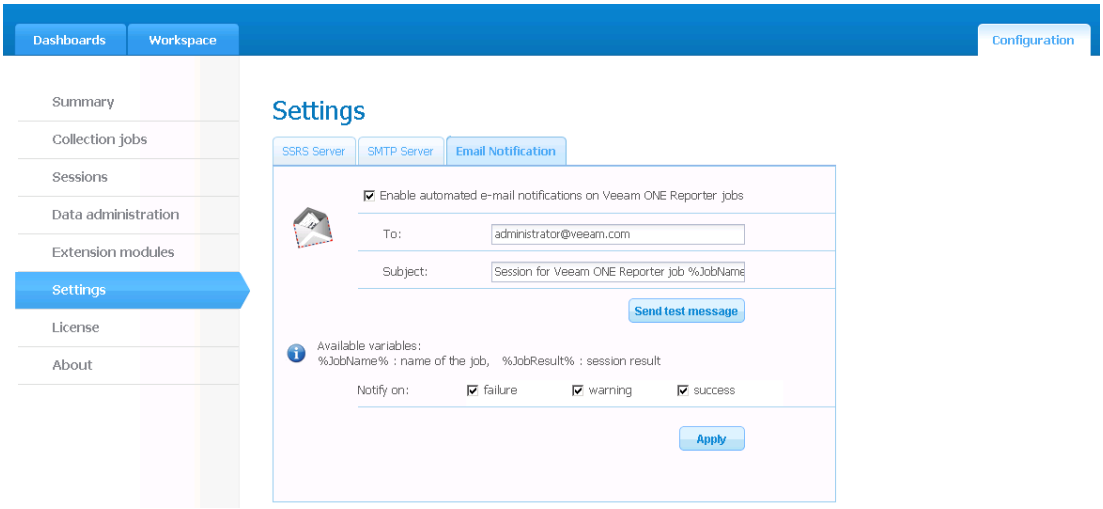
Email Notification Settings

The **Email Notifications** tab allows you to set up email notifications that will inform you about the completion status of Veeam ONE Reporter collection jobs and about failures in scheduled report delivery.

To enable reporting, follow the next steps:

1. Select the **Enable automated email notifications on Veeam ONE Reporter jobs** check box.
2. Enter recipient's email address in the **To** field. If you want to specify several addresses, separate the addresses with semicolons.
3. In the **Subject** field, enter the email subject. You can use the following variables in the subject line: *%JobName%* (name of the collection job) and *%JobResult%* (result of the collection job session).
4. Select the events that should trigger email notifications: on job failure, job warning, and jobs completed successfully. The body of the message includes the job description and a completion report. Additionally, a log file containing detailed summary is attached to the message.

You can send a test email message to verify if the settings on the **Email Notification** tab and on the **SMTP Server** tab are properly configured. Click **Send test message** to send a test email at the address that is specified as the recipient.



Note	Notification emails generated by Veeam ONE Reporter may be regarded as unsolicited messages by some email clients. If you are not receiving any notifications after you have made the appropriate settings, check the junk messages folder to see if your notifications are being diverted. You may also need to adjust spam filtering settings to add the sender's domain to the whitelist or decrease the level of spam filtering intensity. Consult your anti-spam vendor documentation.

Configuring Data Administration Settings

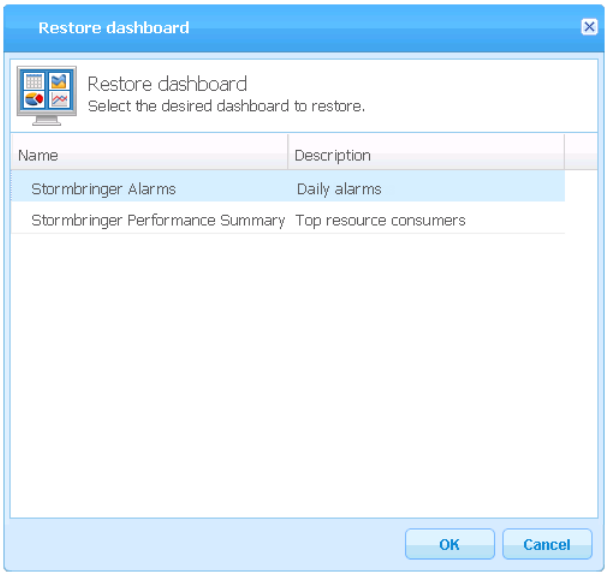
The **Data administration** section of the **Configuration** view allows you to work with the dashboards archive and control visibility of virtual infrastructure objects.

Working with the Dashboard Archive

When you remove a dashboard, Veeam ONE Reporter does not delete it completely. Instead, it places the dashboard to the dashboard archive. Thus, the dashboard archive for dashboards serves as the Recycle Bin for Windows files and folders. You can restore previously deleted dashboards from the dashboard archive or purge the dashboards archive to completely remove deleted dashboards.

To restore a dashboard from the dashboard archive, follow the next steps:

1. Open the **Data Administration** section in the **Configuration** view.
2. In the **Dashboard archive** section, click the **Restore** button.
3. In the **Restore dashboard** window, select the dashboard that you want to restore from the archive and click **OK**.



To purge the dashboard archive, follow the next steps:

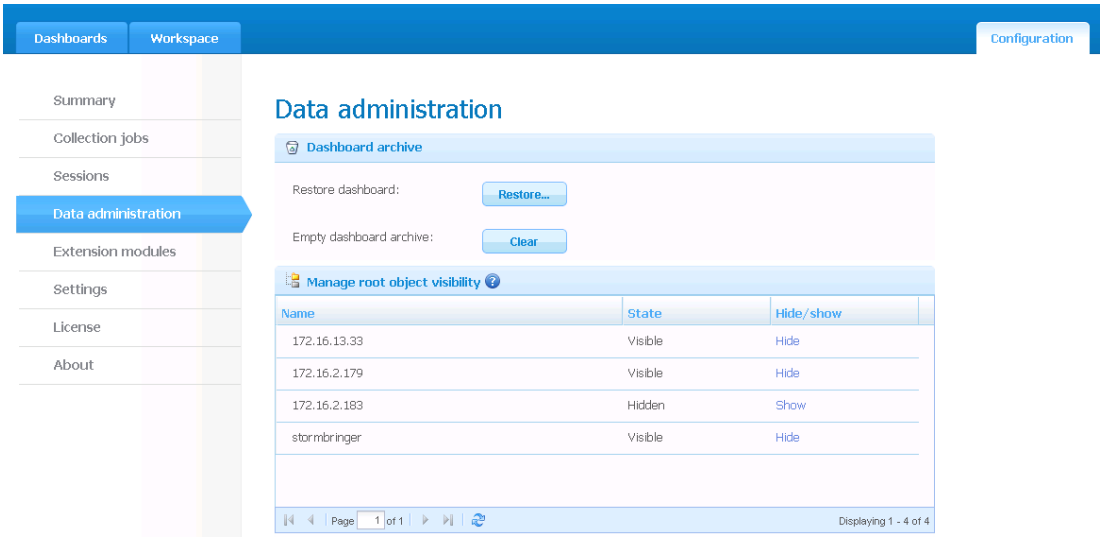
1. Open the **Data Administration** section in the **Configuration** view.
2. In the **Dashboard archive** section, click the **Clear** button.

Changing the Root Object Visibility

The **Manage root object visibility** section allows you to select which root objects (that is, connected VMware servers along with their child objects) should or should not be displayed in the virtual infrastructure hierarchy in the **Workspace** and **Dashboard** views. Note that this option is applicable only to root objects – that is, vCenter Servers, ESX(i) hosts for which data is collected.

Click **Hide** if you want to hide an object – as a result, the object will not be displayed under the virtual infrastructure hierarchy in the **Workspace** and **Dashboard** views. To unhide a previously hidden object, click **Show**.

Note When a VMware server is disconnected (a Veeam ONE Reporter collection job is deleted or the server is removed from the Veeam ONE Business View or Veeam ONE Monitor console), a corresponding root object is automatically hidden. When a new virtual server is connected, a corresponding root object is made visible.

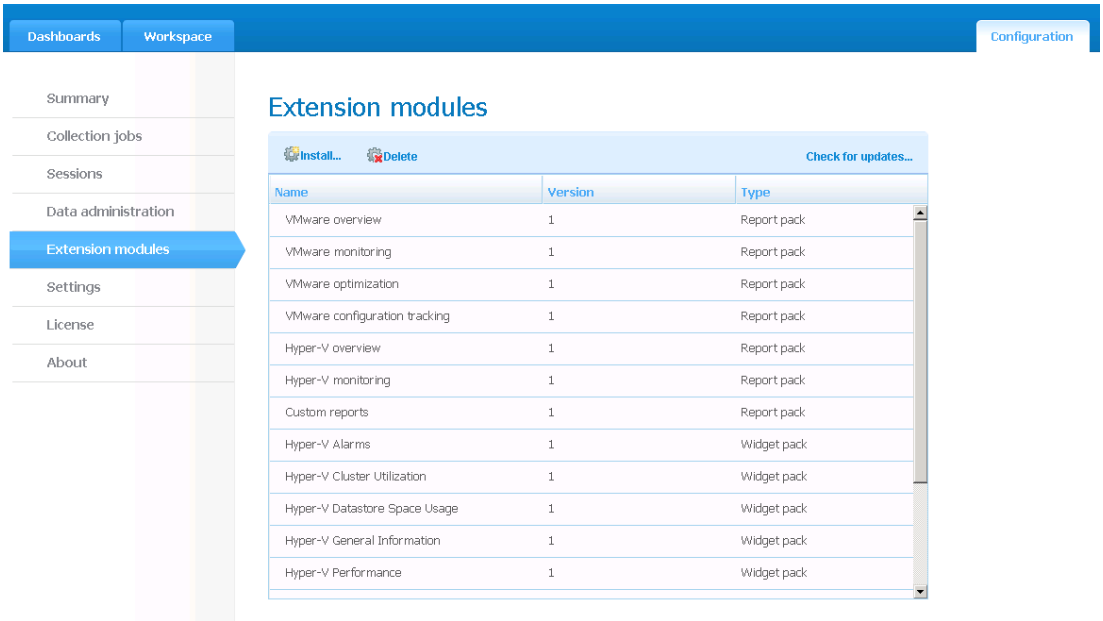


Managing Extension Modules

Extension modules are add-on elements that can be deployed to enhance the Veeam ONE Reporter functionality. The following extension modules are available:

- **Widget pack** – a set of widgets for custom dashboards.
- **Report pack** – a set of report templates that are used for custom reports compilation.
- **Hotfix** – a possible hotfix for Veeam ONE v6.

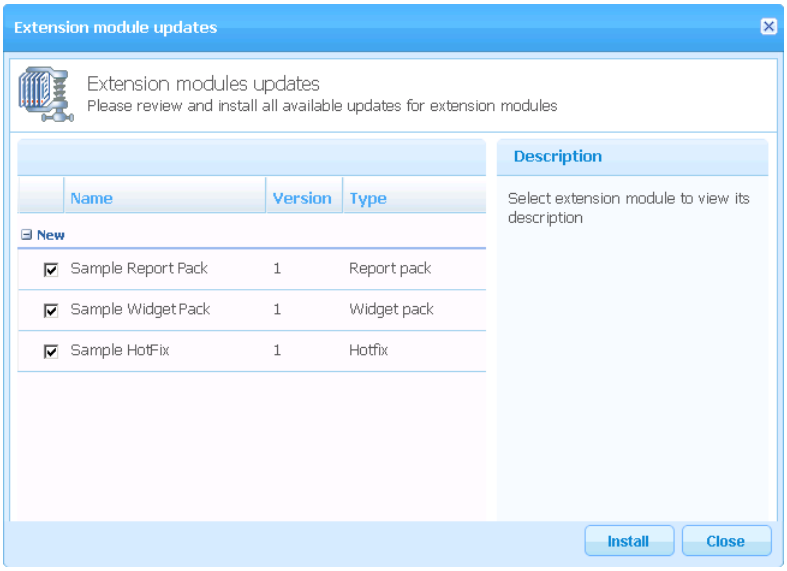
The **Extension modules** section of the **Configuration** view allows you to manage already installed extension modules, install new modules or check for updates.



Extension modules are installed automatically in the process of Veeam ONE installation. If there appear new report packs, widget packs or possible hotfixes, you can install them in the **Extension modules** section.

If the machine where Veeam ONE Reporter is installed is connected to Internet, you can check for updates online. Click **Check for updates** on the toolbar. Veeam ONE Reporter will communicate with the Veeam Update server to download new extension modules.

The list of new modules will be displayed in the **Extension modules** updates windows, along with the information detailing the modules version, type and a brief module description. Select check boxes next to the modules you want to install and click **OK**.



The new modules will appear in the list of installed extension modules.

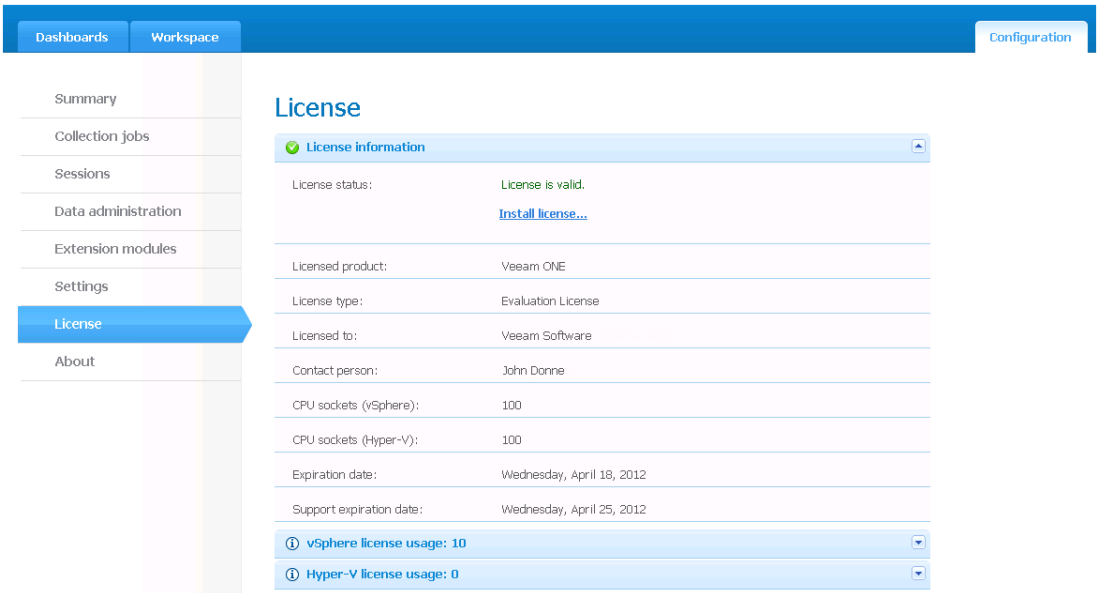
If the machine where Veeam ONE Reporter is installed does not have Internet connection, you can obtain new modules from www.veeam.com and install them modules manually. To do so, click **Install** on the toolbar and specify the local path to the module.

If you do not need some of the installed extension modules, you can delete them. To do so, select a module in the list and click **Delete**.

Note Use extreme caution with this action. Not only the underlying module will be deleted, but you will no longer be able to construct custom reports and create widgets that rely on the contents of the deleted module.

Managing Veeam ONE License

The **License** section displays current license information, allows you to install a new license and manage licensed sockets.



The **License information** section provides details on the currently installed license – license status (validity of your license), licensed product, license type (evaluation or full), product licensees, name of the person to whom the license was issued, number and type of CPU sockets the current license covers, license expiration date and support expiration date.

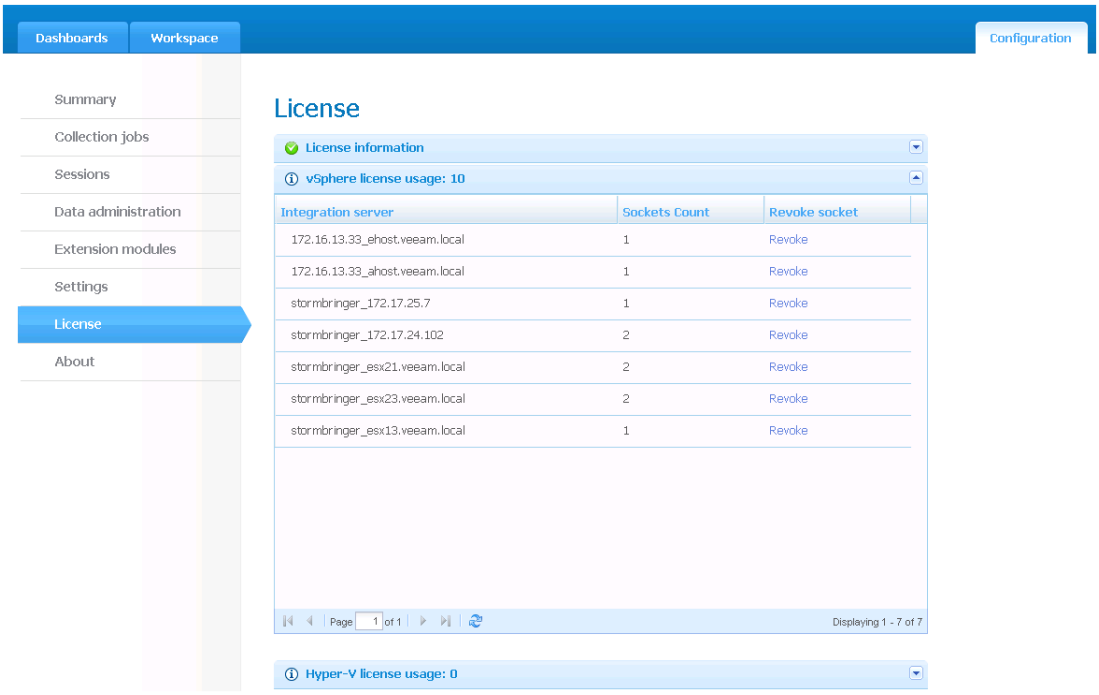
To install a new license, click the **Install license** link and specifying the path where the Veeam ONE product license file (***.lic**) is located. After verification, the license information will be updated to reflect the details of the new license.

Revoking Hosts from the License

Veeam ONE Reporter provides you with a possibility to revoke unused ESX(i) servers from a license — that is, to re-use the license applied to one ESX(i) server to another ESX(i) server. This may be required if the ESX(i) server to which the license is applied does not require reporting anymore (for example, if it is no longer used).

When you access the **License** configuration section of Veeam ONE Reporter for the first time, the **vSphere license usage** section is empty. After you run a collection job targeted at some virtual infrastructure object, for example a vCenter Server, this section will display the list of ESX servers that were engaged in the job, with the number of sockets per each.

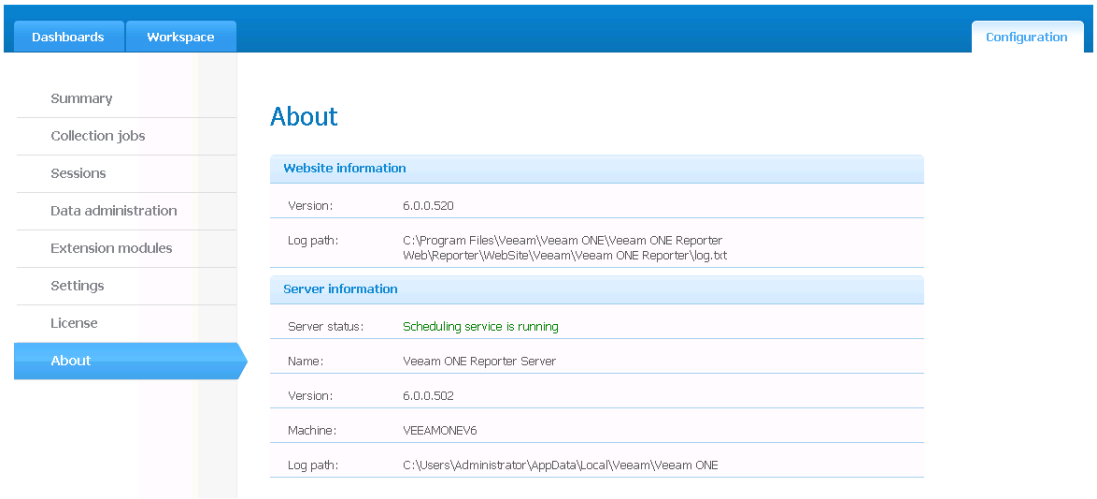
To revoke a specific ESX(i) server, click the **Revoke** link next to it. Licensed sockets used by it will be freed and will become available for use by other ESX(i) servers. When you successfully update a license, the list of ESX(i) hosts will be cleared.



Viewing General Configuration Details

The **About** section of the **Configuration** view provides overall information about the product:

- The **Website information** section displays the current version of the product and the location of the log files.
- The **Server information** section displays Veeam ONE Server component details – the status of the Veeam ONE Reporter Server, Veeam ONE version, the machine where the Veeam ONE Server component is installed and the location of the log files.



DASHBOARDS

Veeam ONE Reporter **dashboards** provide at-a-glance information about your virtual environment. By aggregating key data on a single screen, dashboards allow VMware vSphere administrators and executives to immediately focus on critical areas of the virtual environment, learn about its state and the most important aspects. Dashboards can be viewed through the web, or integrated into third-party dashboards and intranet web portals, such as Microsoft SharePoint.

Predefined dashboards cannot be modified or deleted. In addition to predefined dashboards, you can create custom dashboards that will provide detailed information on particular aspects of your virtual infrastructure.

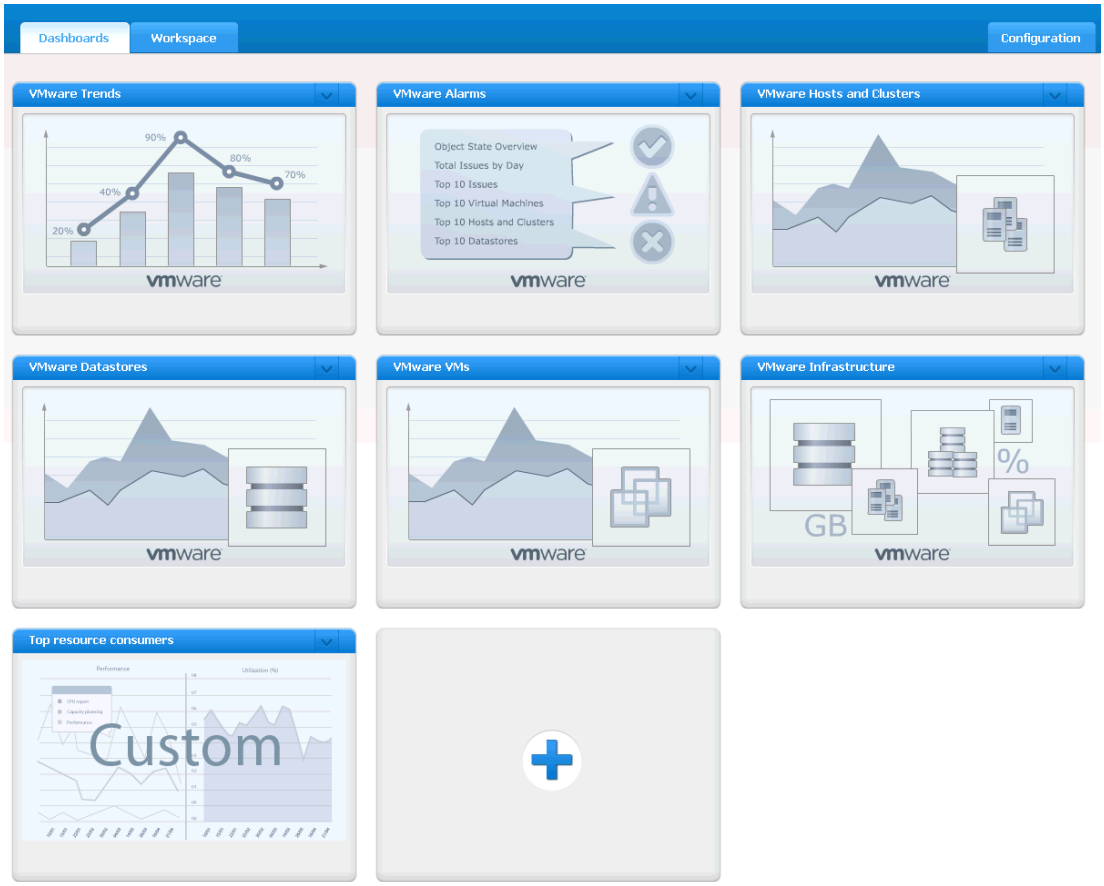
Every dashboard includes a set of visual components – **widgets**. Widgets can display reporting data as charts, graphs and tables.

Viewing Dashboards

To work with Veeam ONE dashboards, click the **Dashboards** tab.

The **Dashboards** view displays preview images of available dashboards. You can re-arrange the order of dashboards by dragging their preview images to the necessary position. The adjacent dashboards will be moved around to make room for the target dashboard.

Veeam ONE Reporter comes with 6 predefined dashboards for the VMware vSphere environments. The **Dashboards** displays only those dashboards, for which data has been collected by corresponding collection jobs.

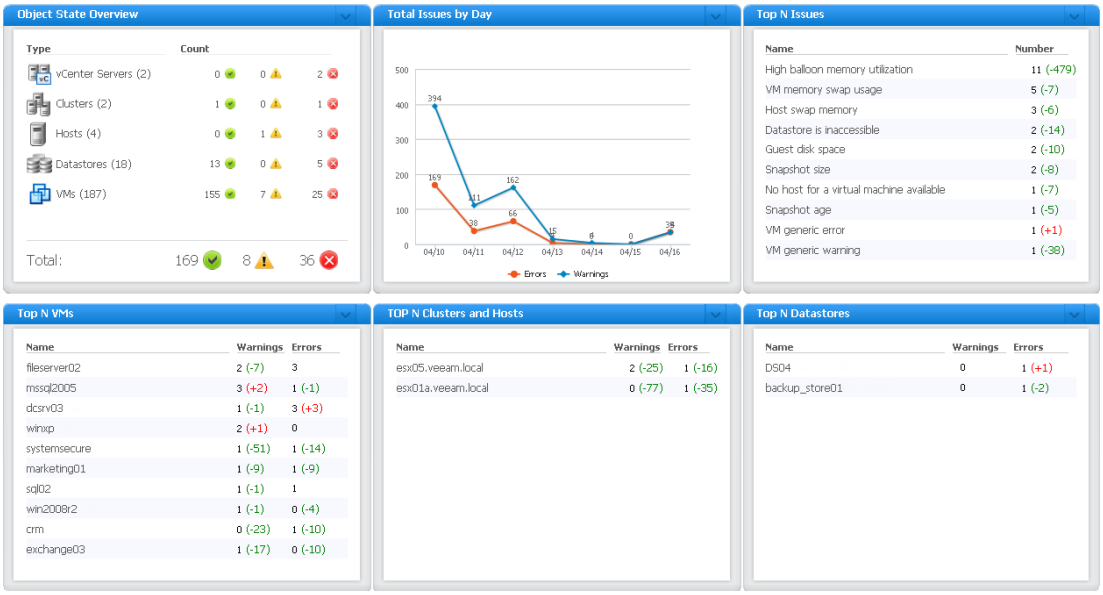


To open a particular dashboard, do one of the following:

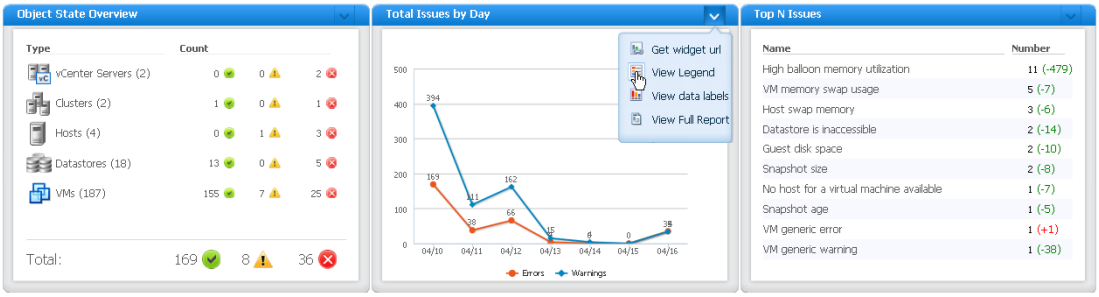
- Click the dashboard preview image.

- Click the **View** link in the bottom left corner of the dashboard preview image.
- Open the menu at the top right corner of the dashboard and click **View dashboard**.

A dashboard displays the current state of your virtual environment in dashboard widgets. Every widget is located in a separate cell, or entry, in the dashboard. Dashboard widgets allow you to review a set of snapshot reports on the same screen.



For chart widgets, you can change display options. Open the menu at the top right corner of the widget and select whether you want to display the legend below the chart or view data labels in the chart.



To get back to the list of dashboards, click the **Dashboards** tab at the top of the page or use the **Back** button in your browser.

Building Up Dashboards

Veeam ONE Reporter enables you to create new dashboards, modify dashboard settings, set dashboard preview images or share dashboards with other people.

Creating Dashboards

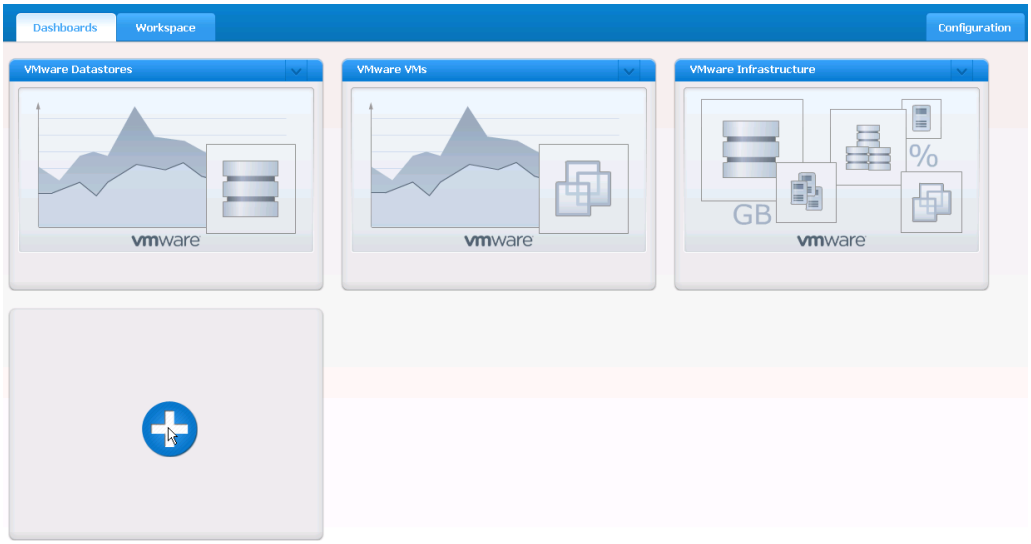
To create a new dashboard, you need to perform the following steps:

1. Specify dashboard settings and select the dashboard layout
2. Add widgets to the dashboard

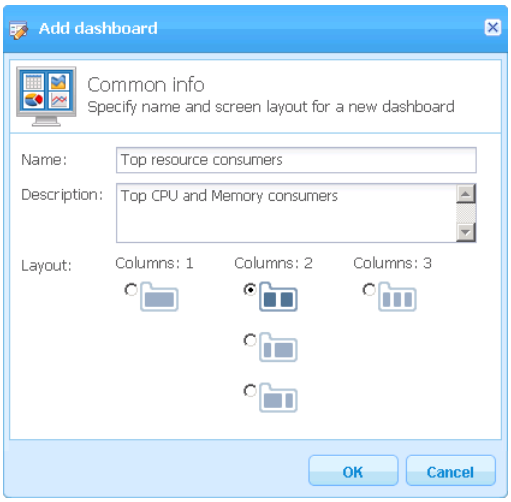
Step 1. Specify dashboard settings and select the dashboard layout

To start creating a new dashboard, you should specify dashboard settings and select the dashboard layout – that is, define how widgets should be arranged.

1. Open the **Dashboards** view, scroll down to the bottom of the page and click the plus icon in an empty cell.



2. In the **Add dashboard** window, enter a name and give a brief description of your future dashboard.
3. Choose the preferred layout to define how widgets should be arranged in the dashboard. Select how many columns you want to display and the preferred width of these columns. Note that you can always change the existing layout later on using the **Edit** menu.



4. Click **OK**. The new empty dashboard will be created and placed onto the **Dashboards** view. Veeam ONE Reporter will automatically open the created dashboard so that you can add dashboard widgets to it.

Step 2. Add widgets to the dashboard

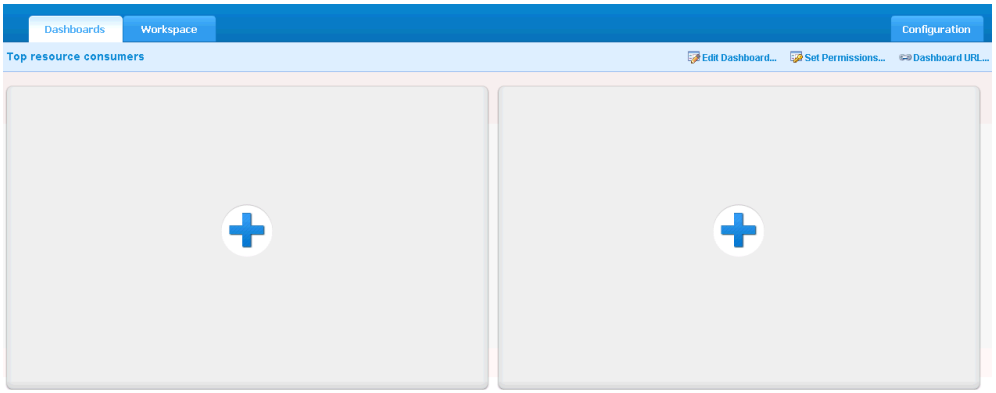
After you have created a new dashboard, you need to add widgets to it. Veeam ONE Reporter allows you to add the following types of widgets:

- Ready-to-use widgets from widget packs
- Report-based widgets from report packs
- Report-based widgets with custom charts and tables

Adding Widgets form Widget Packs

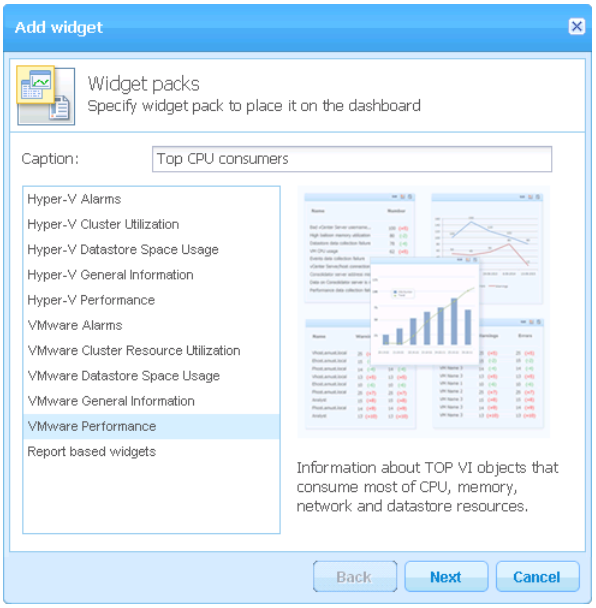
Veeam ONE Reporter comes with 5 widgets packs for VMware vSphere environments. Widget packs include ready-to-use widgets that describe various aspects of your virtual environment. To add to a dashboard a widget from a widget pack:

1. Click the plus icon in one of the dashboard cells. As a result, the **Add widget** wizard will be launched. Follow the steps of the wizard.

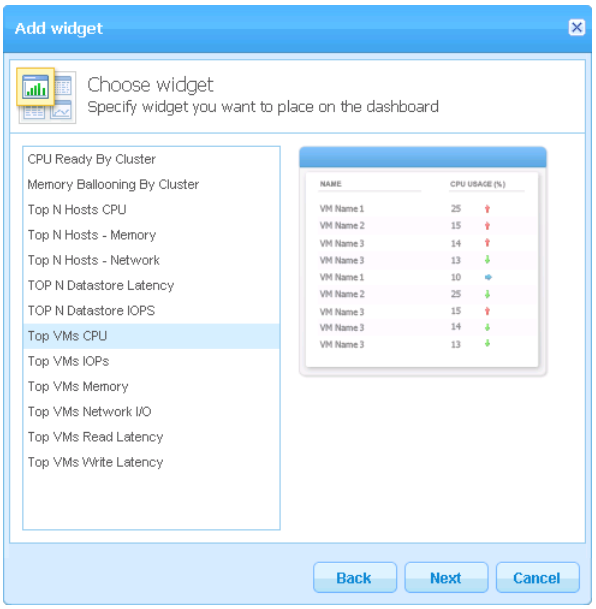


2. At the **Widget packs** step, specify the widget name in the **Caption** field. The widget name will be displayed at the top of the widget on the dashboard. You can leave the field empty if you do not want to display the widget caption; however in this case it might be difficult to identify the widget.

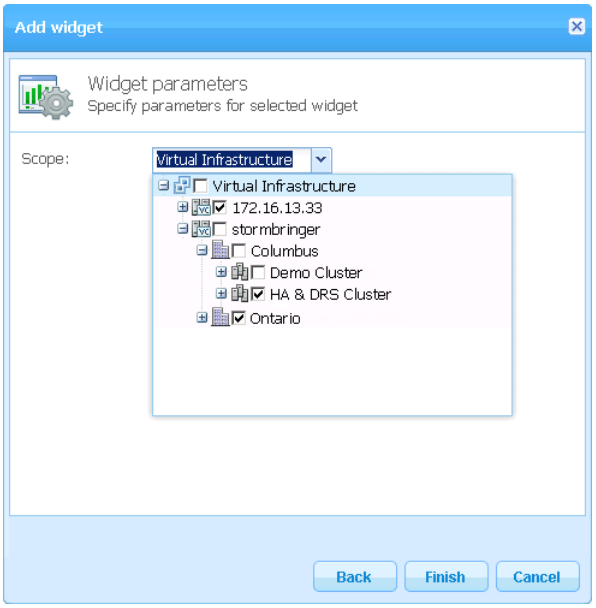
   Choose the desired widget pack. In the field on the right, you will see a sample presentation of widgets included into the selected widget pack, and a brief description of the widget pack. This will give you a hint of what information will be analyzed and displayed in the widget. Double-click the selected pack or select the pack in the list and click **Next**.



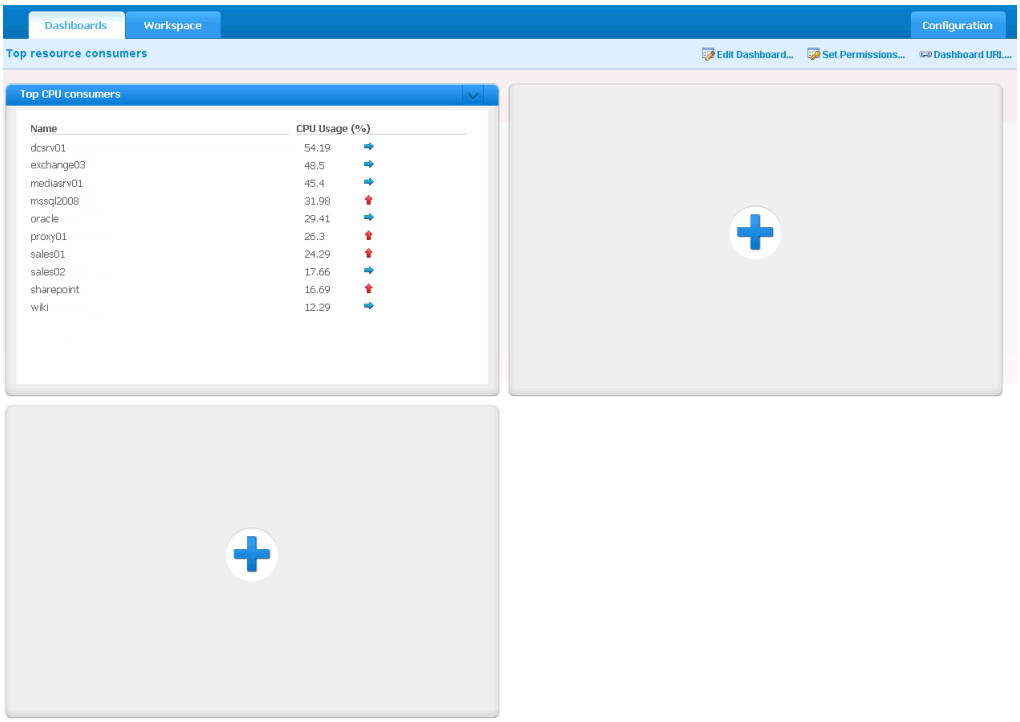
3. At the **Choose widget** step, choose the widget that you want to add to the dashboard. In the field on the right, you will see an image with a preview of the widget style. This will give you a hint of how the widget will look on the dashboard. Double-click the selected widget or select the widget in the list and click **Next**.



4. At the **Widget parameters** step, define the scope of the widget – that is, select virtual infrastructure objects for which data should be analyzed in the widget. You can select to display data for the whole virtual infrastructure, or for specific virtual infrastructure objects (for example, datacenters, clusters and hosts).



5. Click **Finish** to add the widget to the dashboard.
6. Repeat the procedure for all widgets you want to add.



Adding Widgets from Report Packs

A number of reports in Veeam ONE Reporter have associated widgets that you can add to dashboards. Report-based widgets provide more flexibility than ready-to-use widgets –before you add a widget to a dashboard, you can set the necessary properties for a corresponding report to define what data should be displayed in the widget and how report data should be presented.

You can create widgets for the following reports:

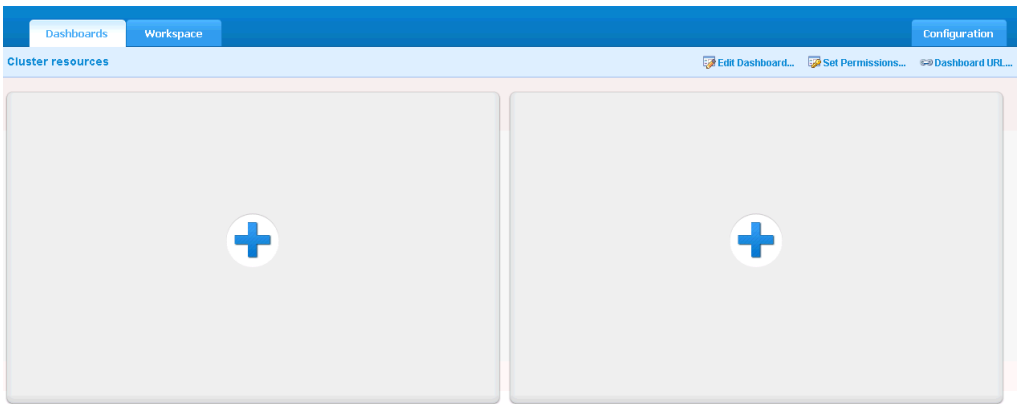
- Cluster Configuration
- Datastore Capacity
- Hypervisor Version
- Inefficient Datastore Usage
- Infrastructure Changes by User
- Infrastructure Changes by Object

To add to a dashboard a report-based widget:

1. In the **Workspace** section, select the necessary report template, change the report parameters if required and save the template as a report.

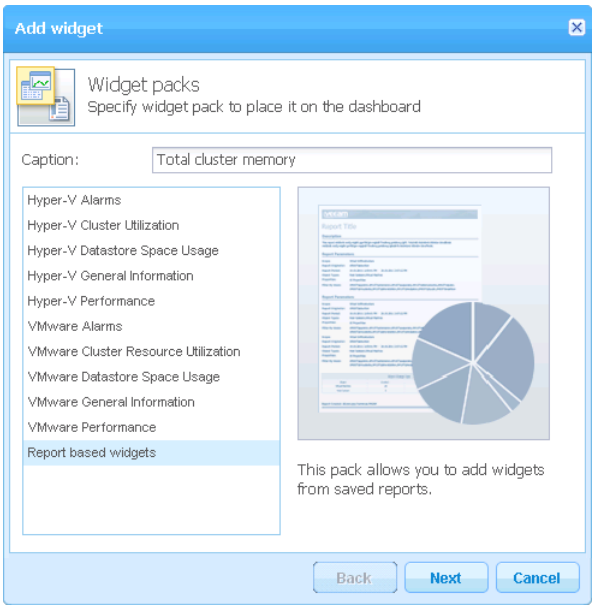
   If the necessary report is not available in the list of saved reports, you will not be able to work with its widgets. To learn more about working with saved reports and saving reports from templates, refer to the Workspace section.

2. In the **Dashboard** section, open the necessary dashboard and click the plus icon in one of the dashboard cells. As a result, the **Add widget** wizard will be launched. Follow the steps of the wizard.

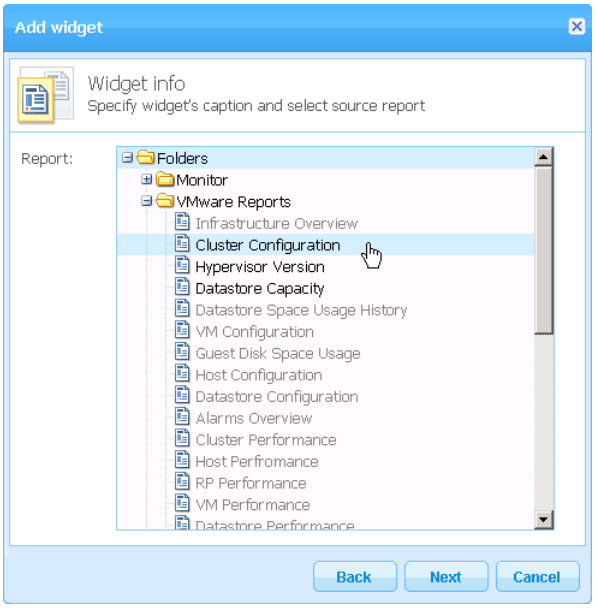


3. At the **Widget packs** step, specify the widget name in the **Caption** field. The widget name will be displayed at the top of the widget in the dashboard. You can leave the field empty if you do not want to display the widget caption; however in this case it might be difficult to identify the widget.

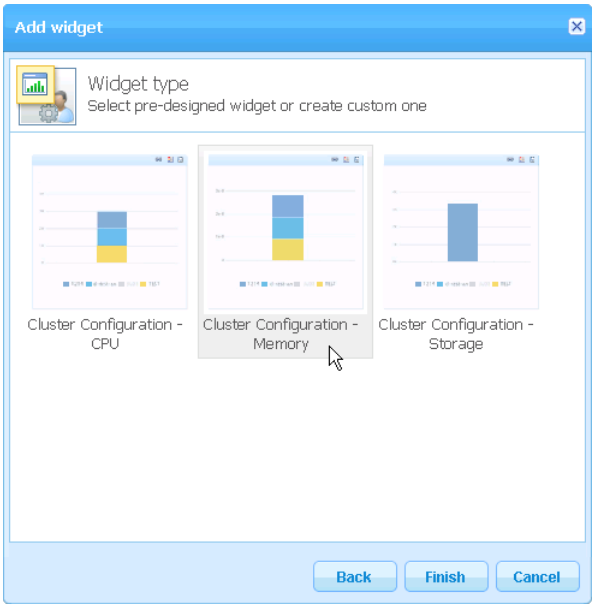
Double-click the *Report based widgets* option or select the *Report based widgets* option and click **Next**.



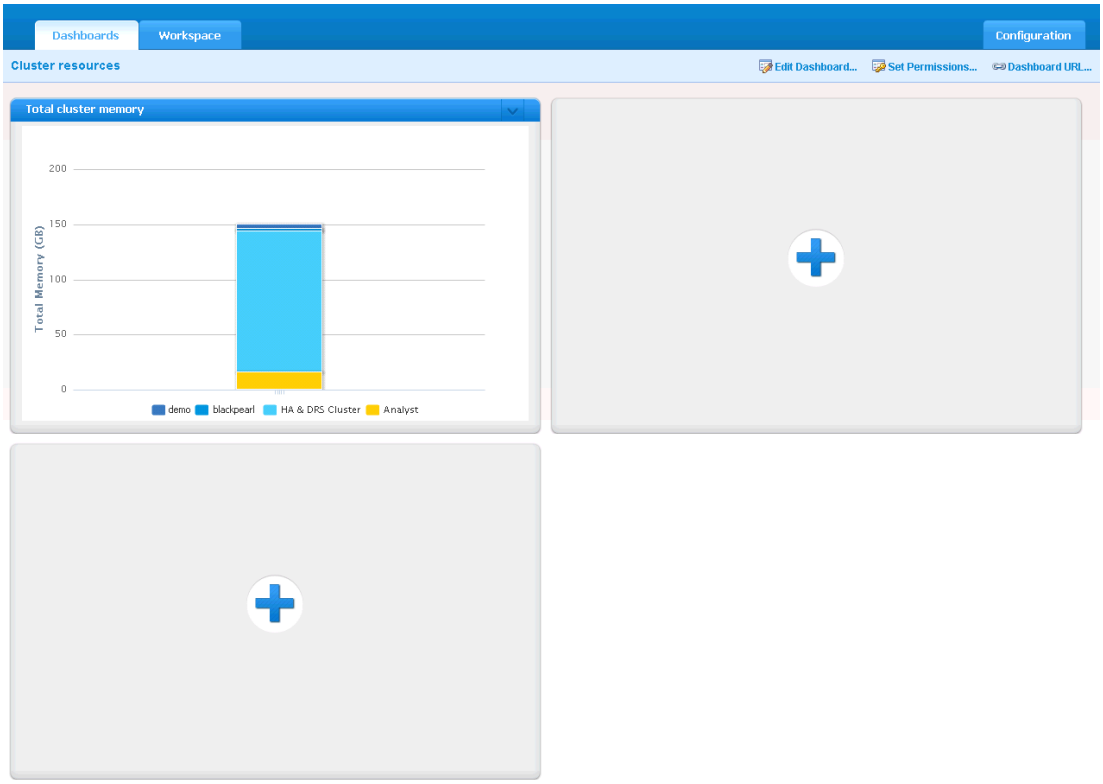
4. At the **Widget info** step, choose the saved report. Reports that do not have any associated widgets are grayed-out in the list. Double-click the selected report or select the report and click **Next**.



5. At the **Widget type** step, select the widget type and click **Finish**.



6. Repeat the procedure for all report-based widgets you want to add.



Adding Widgets with Custom Charts and Tables

In addition to ready-to-use widgets and report-based widgets, Veeam ONE Reporter allows you to add widgets that are based on the *Custom Infrastructure* report. Widgets of this type allow you present virtual infrastructure data in a table or in a chart of the following types: *exploded pie*, *clustered column* and *stacked column*.

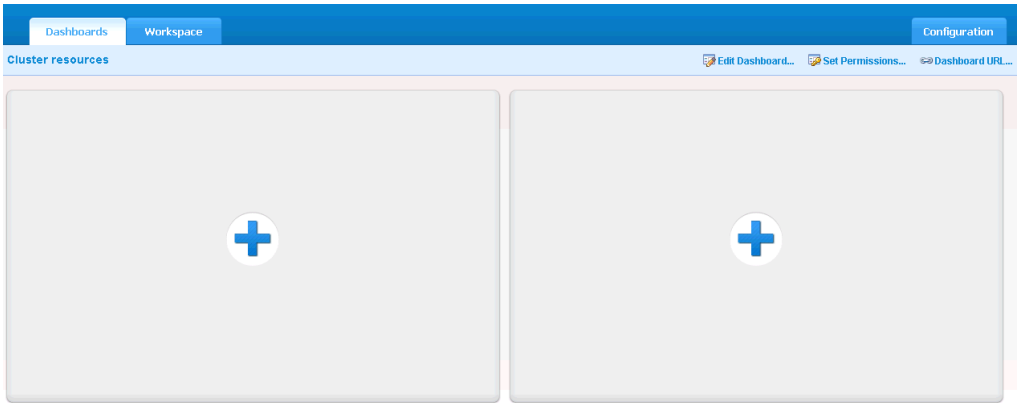
To add to a dashboard a widget that is based on the *Custom Infrastructure* report:

1. In the **Workspace** section, select the *Custom Infrastructure* report template. Set the necessary report properties: collection session, report scope, type of virtual infrastructure objects and object properties (columns) that you want to use in a table or on a chart. If

required, define additional filtering and sorting settings and save the template as the report.

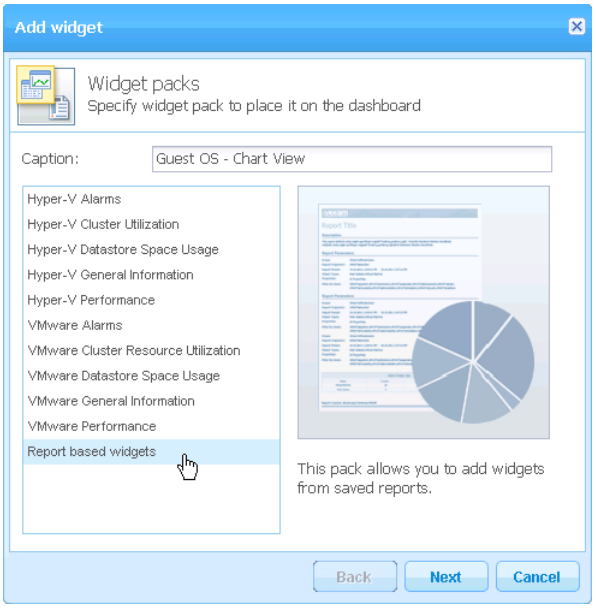
To learn more about saving reports from templates and working with saved reports, refer to the Workspace section.

2. In the **Dashboard** section, open the necessary dashboard and click the plus icon in one of the dashboard cells. As a result, the **Add widget** wizard will be launched. Follow the steps of the wizard.

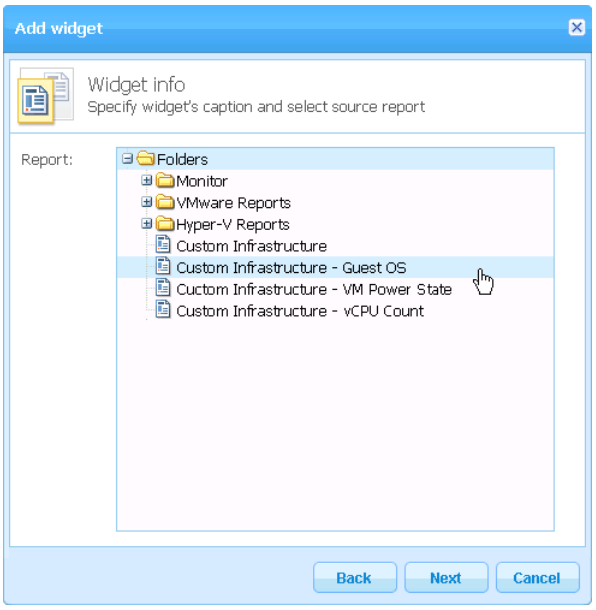


3. At the **Widget packs** step, specify the widget name in the **Caption** field. The widget name will be displayed at the top of the widget in the dashboard. You can leave the field empty if you do not want to display the widget caption; however in this case it might be difficult to identify the widget.

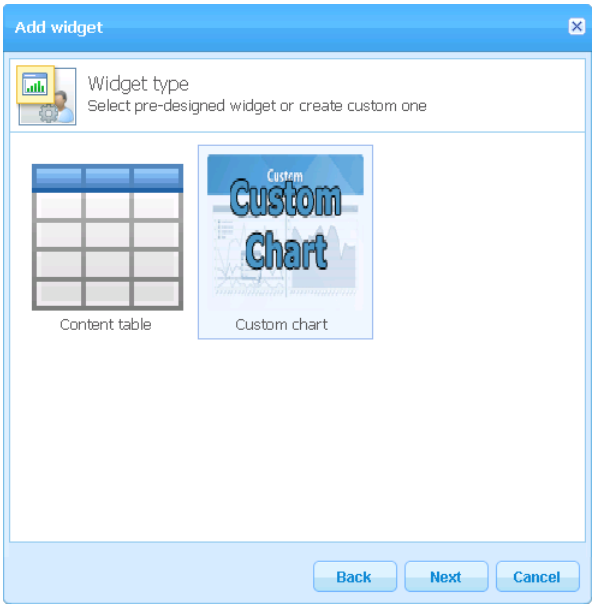
Double-click the *Report based widgets* option or select the *Report based widgets* option and click **Next**.



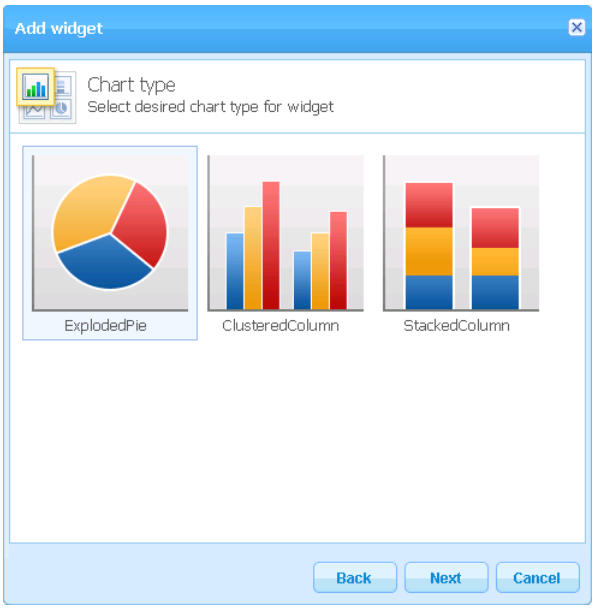
4. At the **Widget info** step, choose the saved *Custom Infrastructure* report. Double-click the report or select the report and click **Next**.



5. At the **Widget type** step, select how you want to present report data in the widget.
   - If report data should be organized as a table, select *Content table* and click **Finish**. Veeam ONE Reporter will add a widget with a table to the dashboard.
   - If report data should be presented as a chart, select *Custom chart* and click **Next**.



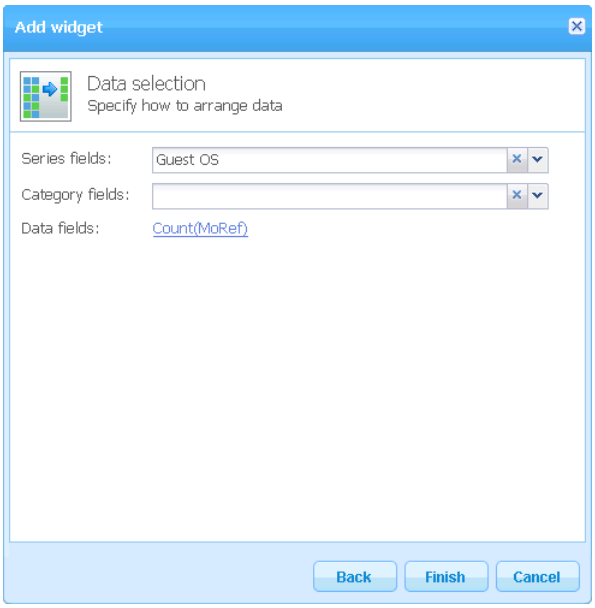
6. At the **Chart type** step, select the type of a chart that should be displayed in the widget and click **Next**.



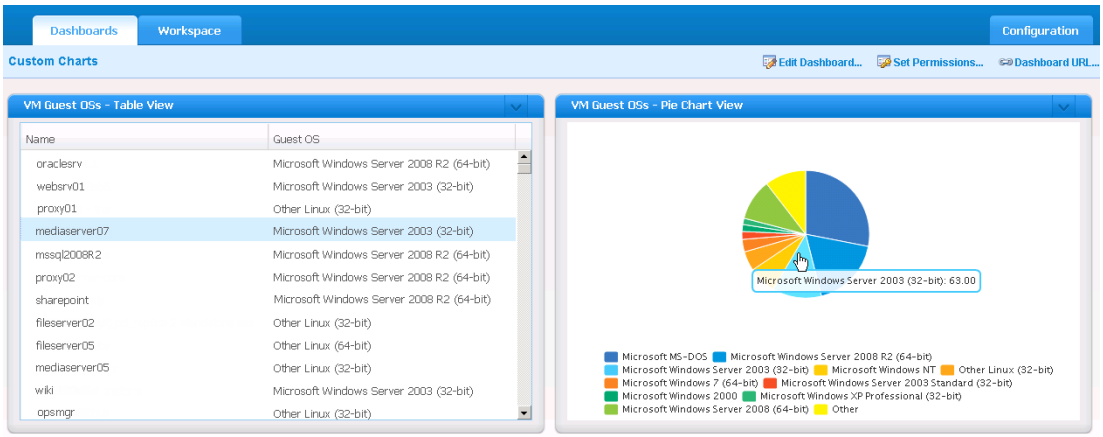
At the **Add widget** step, select series fields, category fields and data fields to define what type of data should be presented in the chart and how this data should be grouped. You can only choose properties that you have previously added as columns in the *Custom Infrastructure* report.

- **Series fields** – select what type of data should be plotted in the chart. The series field is a set of related data that is distinguished by a unique color and presented in the chart legend.
- **Category fields** – select a criterion that will be used to group series fields. A category field is usually presented as a group of series fields on the horizontal axis.
- **Data fields** – select what type of values should be aggregated into a single slice, bar or a column in the chart and select the aggregate function.

Every chart type requires a specific set of data – for example, exploded pies are two-dimension charts so you need to select only the series fields and data fields, while for clustered column charts, you need to select series fields, category fields and data fields. Basic principles of working with custom charts and simple examples are described in Appendix A.



7. Click **Finish**. Repeat the procedure for all report-based widgets with custom charts or tables you want to add.



Managing Dashboards

With Veeam ONE Reporter, you can specify dashboard permissions, edit settings of added dashboards and remove dashboards.

Note Please note that you can edit and delete only custom dashboards that you have added; pre-defined dashboards cannot be edited or deleted.

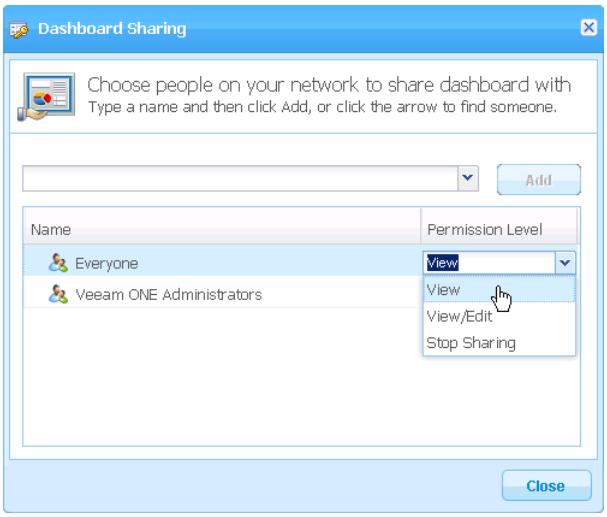
Specifying Dashboard Permissions
Setting the Dashboard Preview Image
Editing Dashboard Properties
Deleting a Dashboard

Specifying Dashboard Permissions

For every dashboard, you can optionally define a set of users who should be able to view and modify it.

Note	The list of users and user groups with which you can share dashboards is retrieved from Active Directory. You cannot grant permissions on dashboards to local users and user groups. To be able to grant permissions to dashboards, make sure that the Veeam ONE server is also a part of the domain.

1. In the **Dashboards** view, click **Edit** at the bottom right corner of a dashboard. Alternatively, you can open the menu at the top right corner of the dashboard and click **Edit dashboard**.
2. Click **Set Permissions** on the dashboard toolbar.



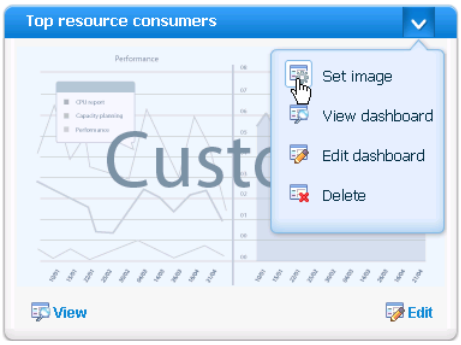
3. In the **Dashboard Sharing** window, select the user or group whose permissions you want to specify. If the user is not available in the list, enter the first letters of the user account name to the **Find people** field and click the **Add** button – as a result, the list of possible matches will be displayed.
4. Use the **Permission Level** list to grant or deny permissions:
   - The **View** permission should be granted to users who should be able to view the dashboard.
   - The **View/Edit** permission should be granted to users who should be able to view the dashboard, edit its settings and widgets.
   - The **Stop Sharing** option allows you to remove a user or a user group from the list of people who have permissions on the dashboard.

Setting the Dashboard Preview Image

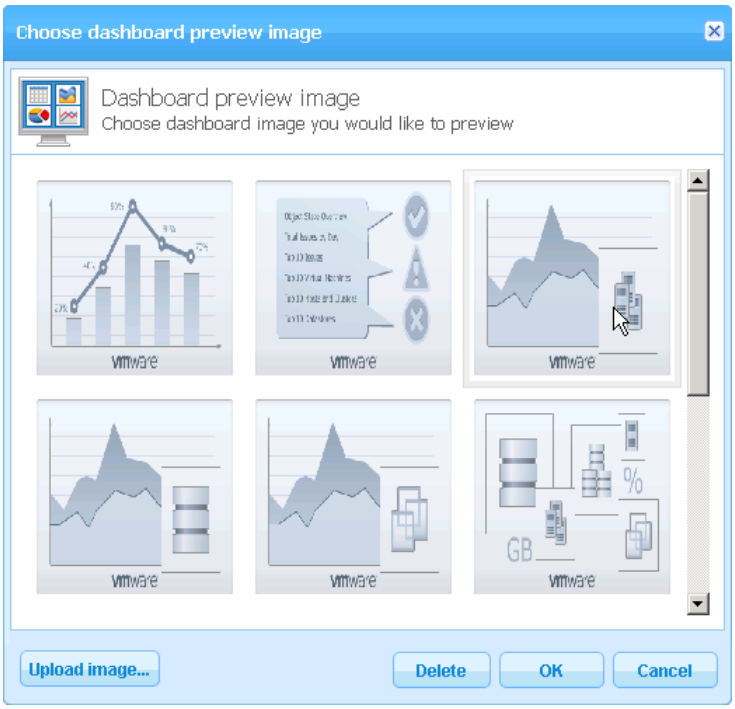
After you have added a new dashboard, you can select the preview image that will be used to depict the dashboard in the **Dashboards** view.

To set a preview image for the dashboard:

1. In the **Dashboards** view, select the necessary dashboard. Open the menu at the top right corner of the dashboard and click **Set image**.



2. From the list of suggested images, choose the image that you want to use to depict the dashboard. You can also depict the dashboard with a custom image – click the **Upload image** button and select the necessary graphic file.



Editing Dashboard Properties

With Veeam ONE Reporter, you can edit properties of the dashboard you have added. To edit dashboard properties, follow the next steps:

1. In the **Dashboards** view, select the necessary dashboard and do one of the following:
   - Open the menu at the top right corner of the dashboard and click **Edit dashboard**.
   - Click **Edit** at the bottom right corner of the dashboard.
2. Click the **Edit dashboard** link on the dashboard toolbar.
3. Change the dashboard properties as required – edit the dashboard name and layout, and arrange the widgets displayed in the dashboard by dragging them to the necessary positions.

4. Click **OK** to save changes.

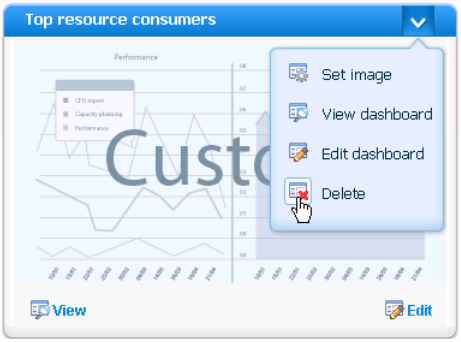
Note Only users who have the **View/Edit** permissions can edit the dashboard properties. For details, see the Specifying Dashboard Permissions section.

Deleting Dashboards

In Veeam ONE Reporter, you can easily delete an added dashboard. When you delete a dashboard, you do not permanently remove it. Instead, you place the dashboard to the dashboard archive which is similar to the Windows Recycle Bin. You can restore the deleted dashboard later using the Data administration section on the **Configuration** view.

To delete a dashboard:

1. In the **Dashboards** view, select the necessary dashboard.
2. Open the menu at the top right corner of the dashboard and click **Delete**. The deleted dashboard will no longer be available on the **Dashboards** view.



Note Dashboards can be deleted only by users being members of the *Veeam ONE Administrators* groups. To learn more about Veeam ONE user groups and privileges, refer to *Veeam ONE Deployment Guide*.

Managing Widgets

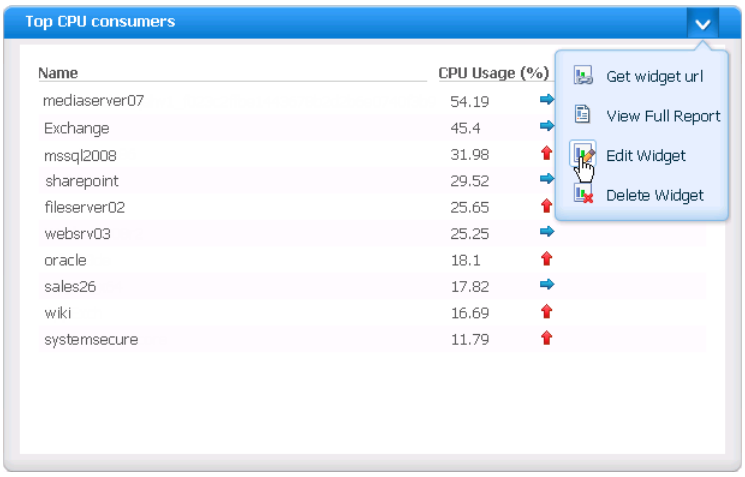
With Veeam ONE Reporter, you can edit settings of a widget added to the dashboard, share the widget with other users and remove widgets from the dashboard.

Editing Widget Properties

In Veeam ONE Reporter, you can easily change the way your widgets look or feel. To edit the widget properties:

1. In the **Dashboards** view, select the necessary dashboard and do one of the following:
   - Open the menu at the top right corner of the dashboard and click **Edit dashboard**.
   - Click **Edit** at the bottom right corner of the dashboard.

2. On the dashboard, select the widget you want to modify. Open the menu at the top right corner of the widget and click **Edit Widget**.



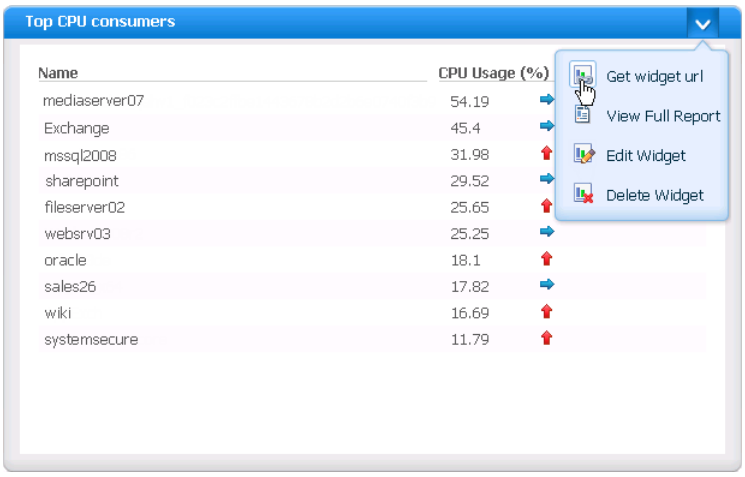
3. As a result, the **Edit Widget** wizard will be displayed. Follow the steps of the wizard and change the widget settings as required.

Sharing Dashboard Widgets

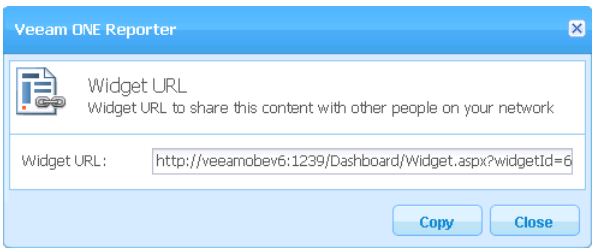
Veeam ONE Reporter allows you to share a dashboard widget with other users, co-workers and stakeholders. You can also embed the widget to intranet web portals.

To share a dashboard widget:

1. In the **Dashboards** view, select the necessary dashboard and do one of the following:
   - Open the menu at the top right corner of the dashboard and click **Edit dashboard**.
   - Click **Edit** at the bottom right corner of the dashboard.
2. On the dashboard, select the widget you want to share. Open the menu at the top right corner of the widget and click **Get widget url**.



3. Copy the URL and use it to share with other users or integrate to web portals.



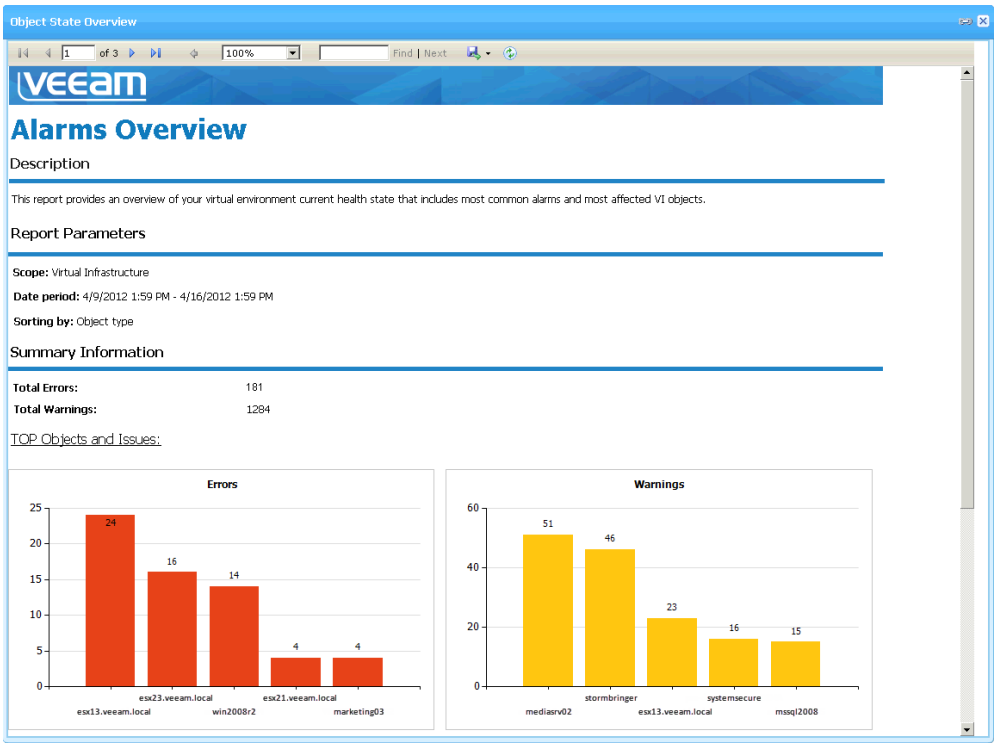
Note	Only users who have the **View/Edit** permissions can copy the widget URL. For details, see the Specifying Dashboard Permissions section.

Creating a Widget Report

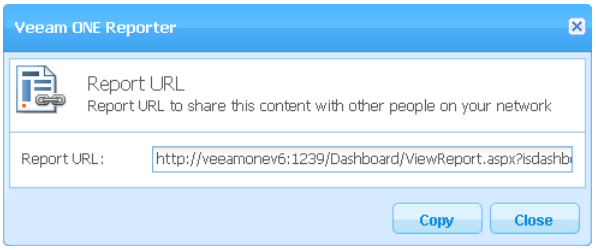
For most widgets, you can create associated reports that will contain data collected for a specific period of time. The report is presented as a graph chart that visualizes the history trend for collected data.

To create a widget report:

1. Open the necessary dashboard and select the widget for which you want to create a report. Open the menu at the top right corner of the widget and click **View Full Report**.
2. Specify report parameters (if applicable).



3. If required, you can share the report with other users, co-workers and stakeholders. To share the report, click the **View report URL** icon at the top right corner of the report and copy the report URL.



Note	Only users who have the **View/Edit** permission can copy the report URL. For details, see the Specifying Dashboard Permissions section.

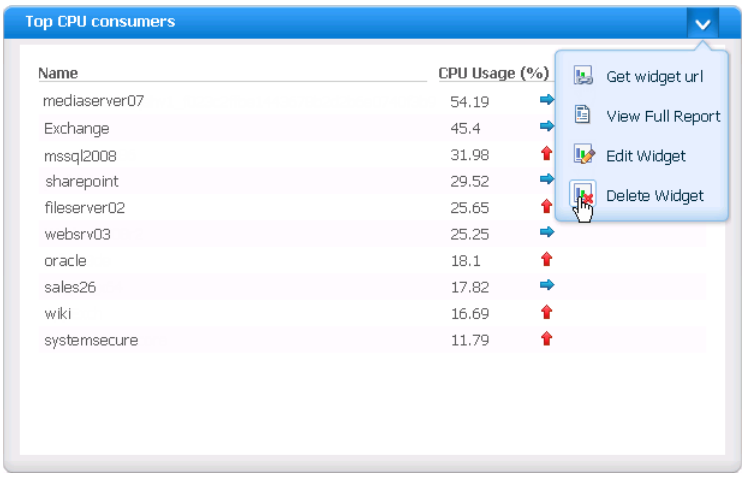
Deleting Widgets

To delete a widget from the dashboard, follow the next steps:

1. In the **Dashboards** view, select the necessary dashboard and do one of the following:
   - Open the menu at the top right corner of the dashboard and click **Edit dashboard**.

- Click **Edit** at the bottom right corner of the dashboard.

2. On the dashboard, select the widget you want to delete. Open the menu at the top right corner of the widget and click **Delete Widget**.



WORKSPACE

The **Workspace** of Veeam ONE Reporter is intended for working with reports – this is the area where you can generate and manage various types of reports. To access the **Workspace**, click the **Workspace** tab.

The workspace is divided into two sections:

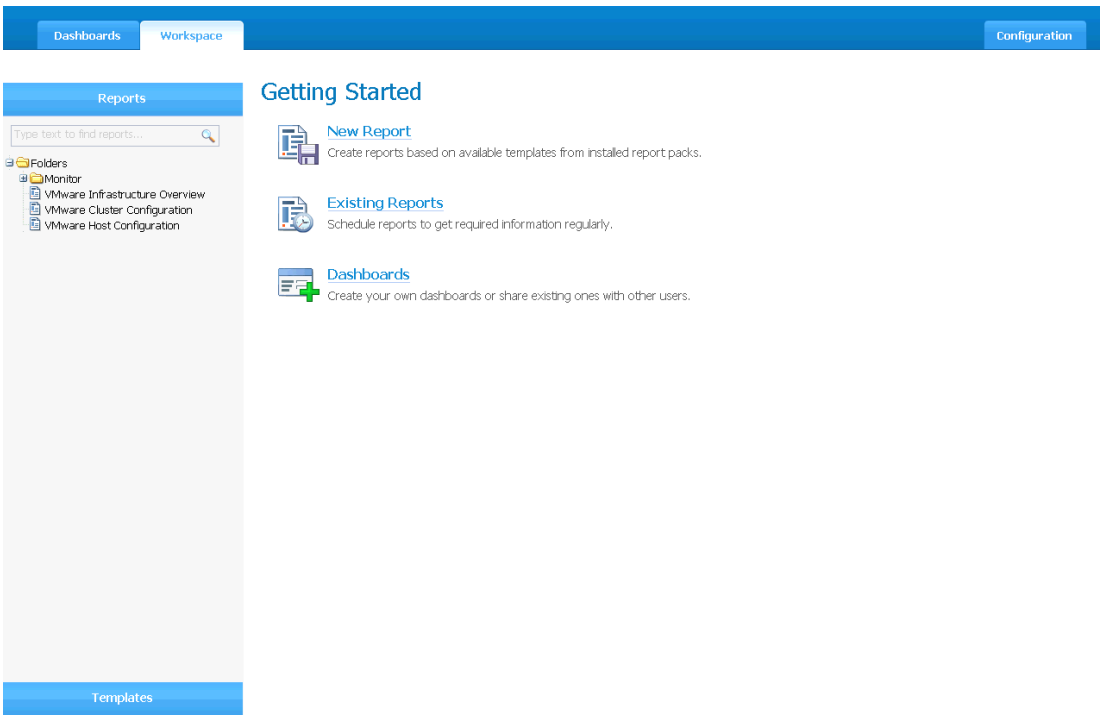
- The **Reports** section allows you to work with saved reports.

  Saved reports are based on commonly used parameters and metrics. Saved reports help to produce a quick overview of your environment's performance, health state, implemented changes and other details and allow you to quickly understand how the virtual infrastructure is performing.

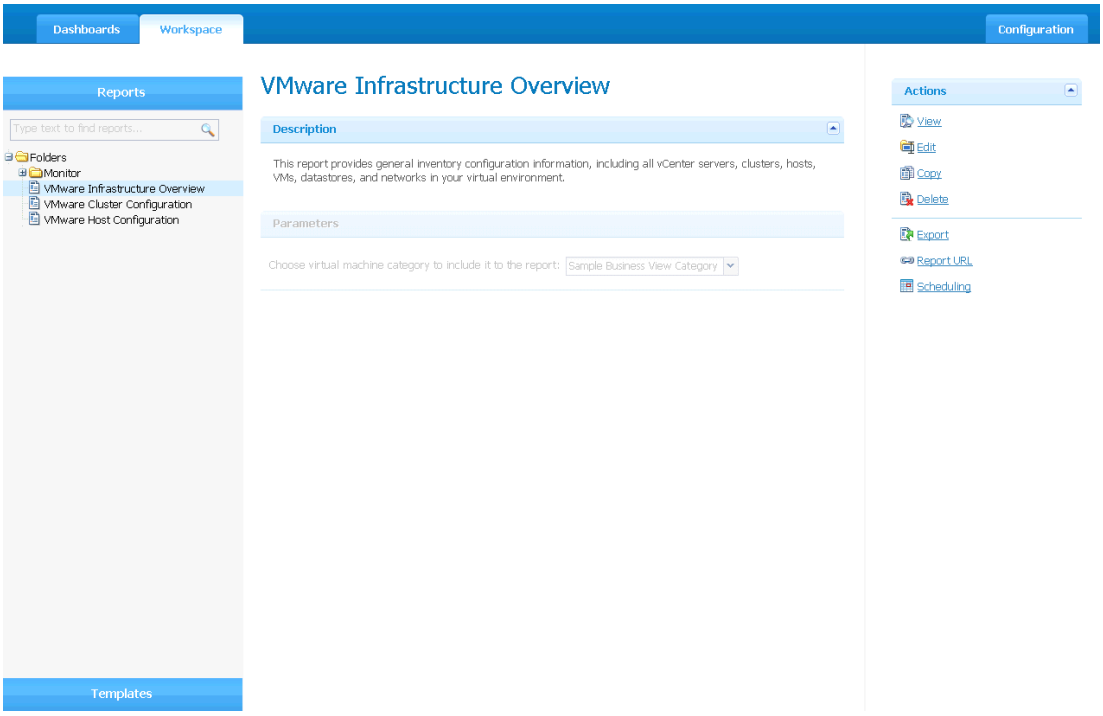
- The **Templates** section allows you to generate reports based on report templates and manage report templates. Report templates are designed to allow users generate reports on specific, user-defined properties of the virtual infrastructure.

To switch between the sections, use the **Reports** and **Templates** tabs on the left.

The workspace home page displays links to three major management areas of Veeam ONE Reporter – you can go to the **Templates** and **Reports** sections or switch to the **Dashboards** view.



The left pane of the **Workspace** contains a list of items with which you can work – these are reports, report folders and templates. The mid part of the **Workspace** displays general information on the selected object and allows you to change parameters of the selected object. The **Actions** pane on the right displays actions that are applicable to the selected report, report template or folder.

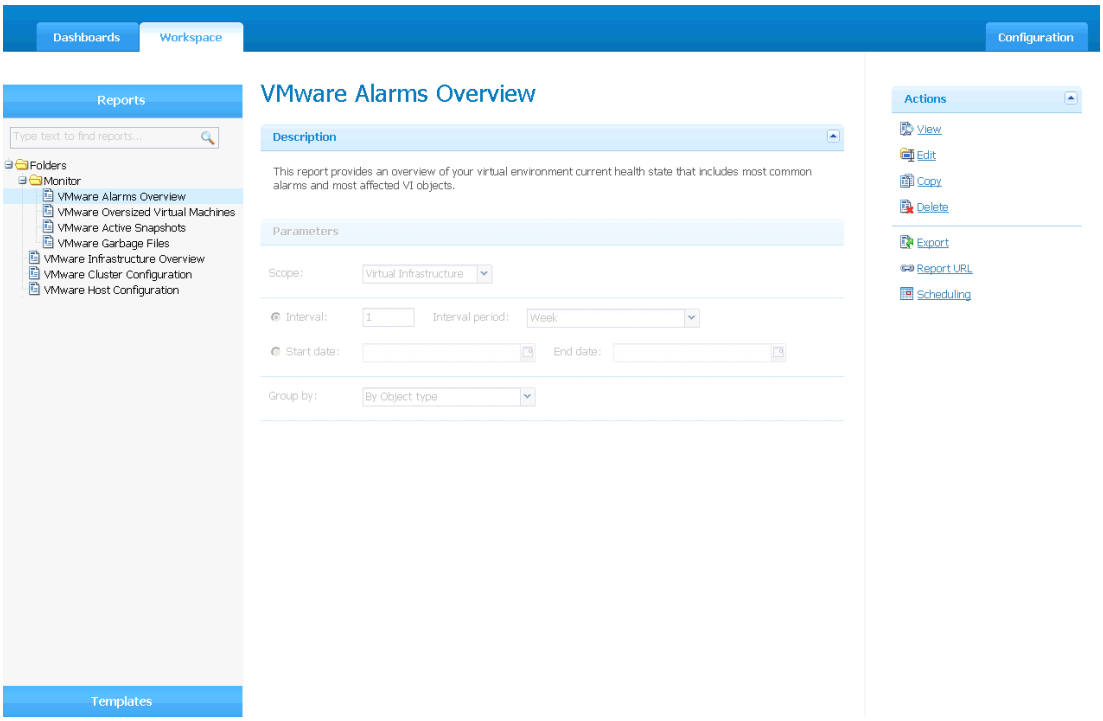


Working with Reports

Out of the box Veeam ONE Reporter comes with a number of ready-to-use reports designed to help you track typical performance and health issues.

Note Before you start working with reports, make sure that data about your virtual environment has been successfully collected at least once. Refer to the Configuring Collection Jobs section for information on configuring and running collection jobs.

To access these reports, open the **Workspace** view and navigate to the **Reports** section. In addition to saved reports that are available after installation, you can create your own reports and save them to the **Reports** section.



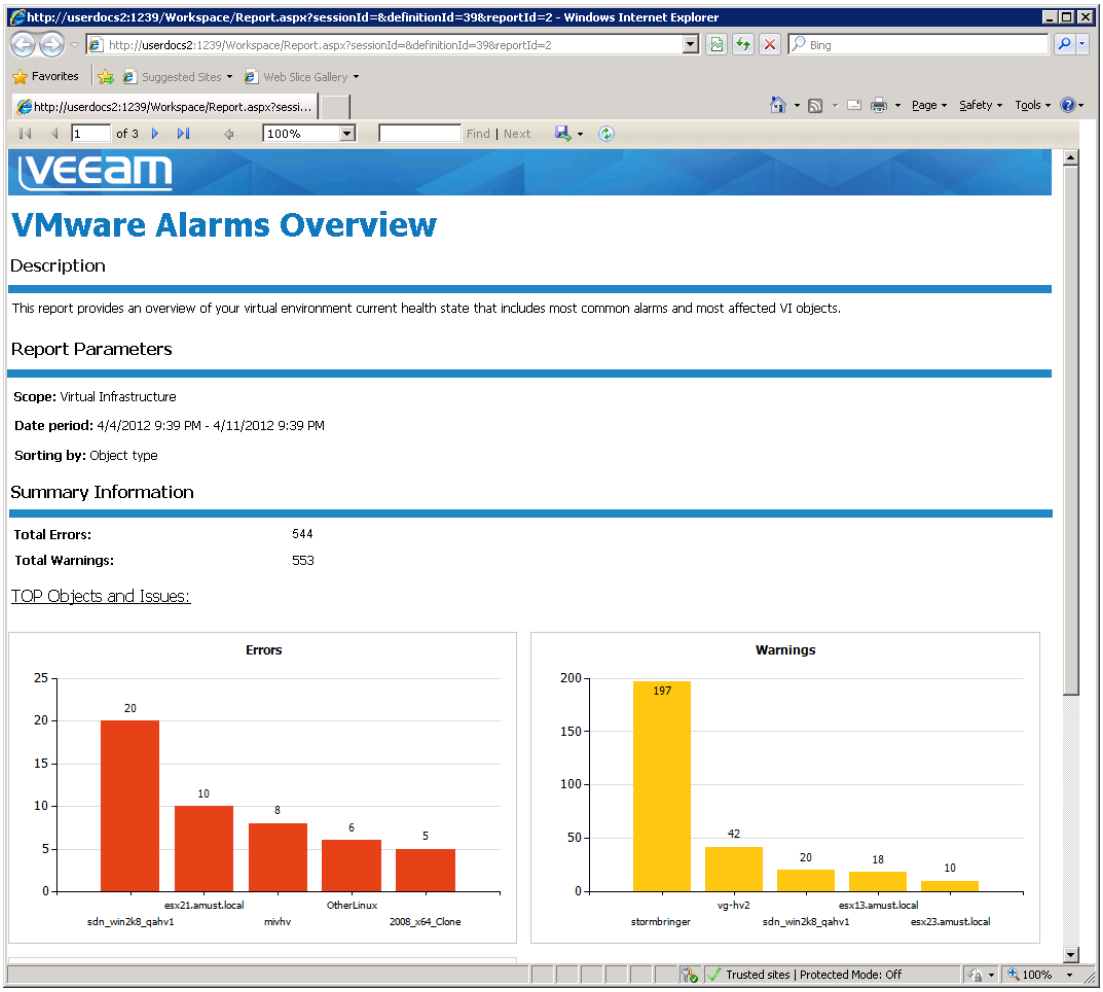
To work with a report, select it in the left pane. The information pane displays the report description and parameters on which the report is based. Note that by default the parameters are grayed-out and can be changed only if you choose to edit the report.

Viewing Reports

To generate a report, select the necessary report in the hierarchy on the left and click the **View** command in the **Actions** pane on the right. Veeam ONE Reporter will open the created report in a pop-up browser window.

Note Make sure that pop-up windows are allowed from the Veeam ONE Reporter website. Otherwise, generated reports will be blocked.

Veeam ONE reports vary depending on the type and input parameters. They can be relatively short or span to several pages. Report data can be presented as graphs, charts, tables or text entries.



The navigation menu at the top of each generated report allows you to manipulate the report:

- Use the left/right arrow buttons to switch between the report pages.
- Use the fast forward/fast backward buttons to go to the last/first page of the report.
- Use the search box to perform search within the report.
- To go to the specific page of the report, enter the necessary page number and press **Enter** on your keyboard.
- Use the back button to return to the parent report from a drill down report.
- Use the **Export** button (shown as a diskette icon) to save your report in one of the following file formats: Excel, Word or PDF (if Veeam ONE Reporter is integrated with the

Microsoft SQL Reporting Services server, additional report formats are available). You can later view your saved reports on another computer or share them with your colleagues.

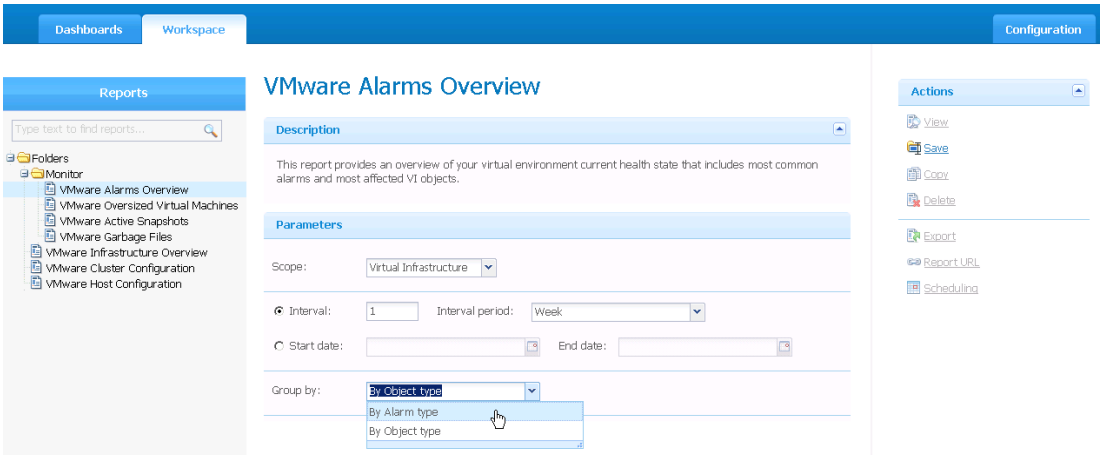
- Use the **Refresh** button to update the report contents with the latest collected data.

Editing Reports

When you select a report, Veeam ONE Reporter displays its description and default report parameters – scope of the reports, period for which data is displayed, grouping options and so on. A set of report parameters depends on a report type. To change default parameters of a saved report, you can edit the report.

To modify default report parameters, follow the next steps:

1. In the **Reports** hierarchy, select the report you want to edit.
2. Click the **Edit** command in the **Actions** pane on the right.
3. Modify parameters of the report as required and click the **Save** command in the **Actions** pane on the right.



Important! After you edit a report, dashboard widgets based on this report may become invalid. If you have previously added widgets that are associated with the modified report, check the widgets and re-create them if necessary.

Organizing Reports

Veeam ONE Reporter allows you to organize your reports with the help of report folders. Similar to file system folders, Veeam ONE Reporter folders are used to group a number of discrete reports. In addition to simply grouping reports, folders allow you to perform operations over a group of reports at once. For example, if you want to schedule an automatic report delivery for a number of reports, you can place the necessary reports to the same folder and then specify a schedule for the whole folder.

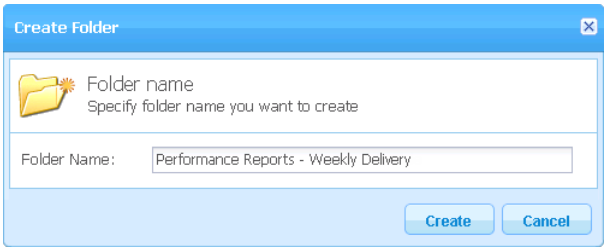
Folders are displayed in the left pane of the **Workspace** view, along with the existing reports.

Note By default, a number of saved reports are included into a pre-created **Monitor** folder. Links to these reports are available on the reports landing page that is accessed from the Veeam ONE Monitor console. You can add new reports to the **Monitor** folder or remove reports from the folder and thus control what quick links should be displayed on the reports landing page. For details, refer to the Adding Links to Reports section.

Creating Folders

To create a new folder, follow the next steps:

1. In the **Reports** hierarchy, select the root **Folders** item. If you want to create a subfolder under any existing folder, select the parent folder in the hierarchy.
2. Click the **New folder** command in the **Actions** pane on the right.
3. In the **Create Folder** window, enter the name of a new folder and click **Create**.



The new folder will be added to the **Folders** list.

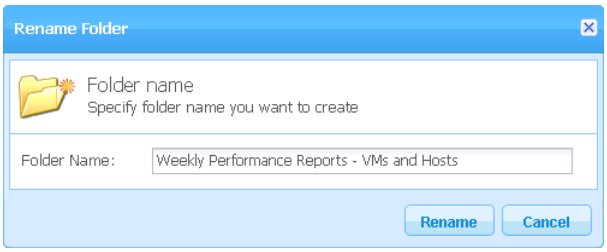
After you create a folder, you can move reports to it using drag and drop. To prevent an accidental erasure or modification of a report, you can create a report copy first and then move it to the folder.

Tip In a similar fashion, you can reorganize folders by dragging and dropping folders to other folders.

Renaming Folders

To change a folder name, follow the next steps:

1. In the **Reports** hierarchy, select the folder you want to rename.
2. Click the **Rename folder** command in the **Actions** pane on the right.
3. In the **Rename Folder** window, enter the name of a new folder and click **Rename**.

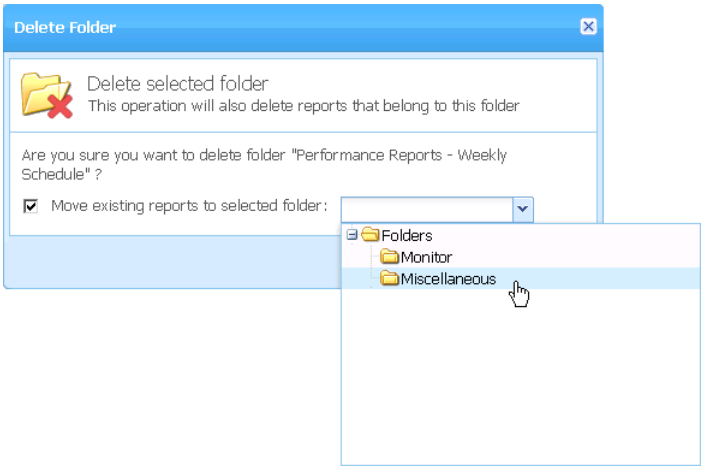


Deleting Folders

If you no longer need a folder, you can delete it while still retaining its contents – reports and subfolders. To delete a folder, follow the next steps:

1. In the **Reports** hierarchy, select the folder you want to delete.
2. Click the **Delete folder** command in the **Actions** pane on the right.
3. If the folder you are trying to delete contains reports or subfolders, you may choose to move the folder contents to another folder. To do so, select the **Move reports to selected folder** check box, choose the new destination folder from the list and click **OK**.

   If you leave the check box cleared, the folder will be deleted along with its contents.



Note Use caution with this option, since deleted folders or resident reports cannot be restored.

Importing Reports

Veeam ONE Reporter allows you to import a previously exported report to a current folder. You can use the export possibilities if you need to move one or more custom reports from one Veeam ONE Reporter deployment to another

To import a report into a folder, follow the next steps:

1. In the **Reports** hierarchy, select the folder to which you want to import a report.
2. Click the **Import report** command in the **Actions** pane on the right.
3. In the **Choose File to Upload** dialog box, select a report that you want to import and click **Open**. Veeam ONE Reporter will import the selected report into the target folder.

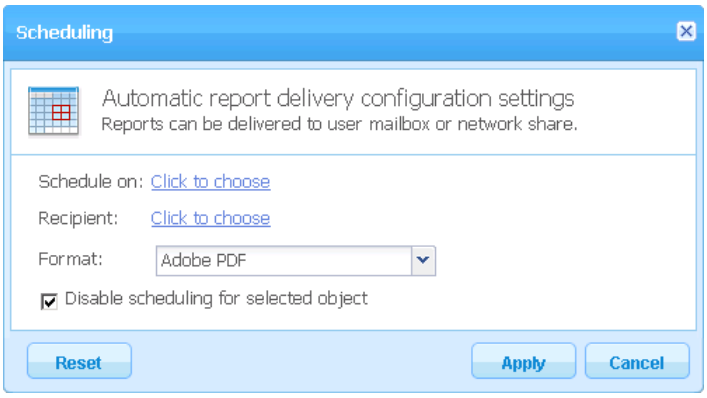
Scheduling Reports

To automate a reporting procedure, you can schedule automatic report delivery for one report or for a number of reports included in a specific report folder.

You can select to receive ready reports by email, automatically write them to a folder on a hard drive and to a network share. Created reports will contain the latest data about virtual infrastructure that has been collected by collection jobs.

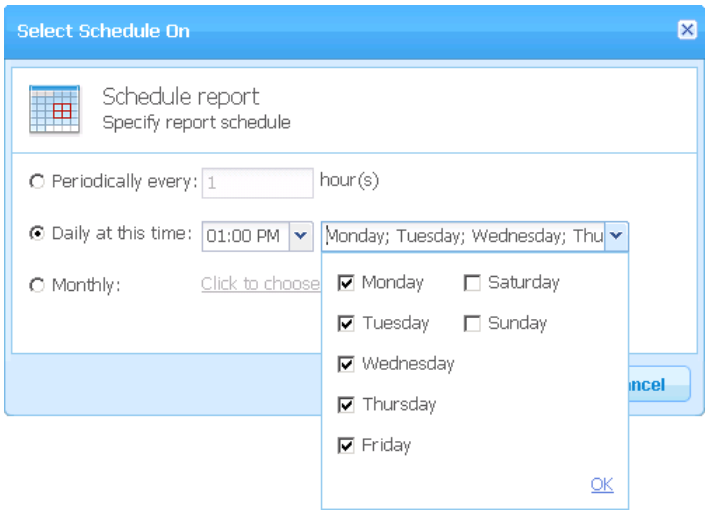
To schedule automatic report delivery, follow the next steps:

1. In the **Reports** hierarchy, select the report you want to edit.
2. Click the **Scheduling** command in the **Actions** pane on the right.
3. In the **Scheduling** window, configure your scheduling options.



4. Click the link in the **Schedule on** section to define the schedule according to which the report should be generated:

   - If you are planning to generate and deliver reports at some time intervals, select the **Periodically every… hour(s)** option and define the necessary interval.
   - If you want to generate and deliver reports at specific time, select the **Daily at this time** option, enter the time and week days on which the reports will be created.
   - If you want to generate and deliver reports on a monthly basis, select the **Monthly** option and choose the necessary months and dates or week days.

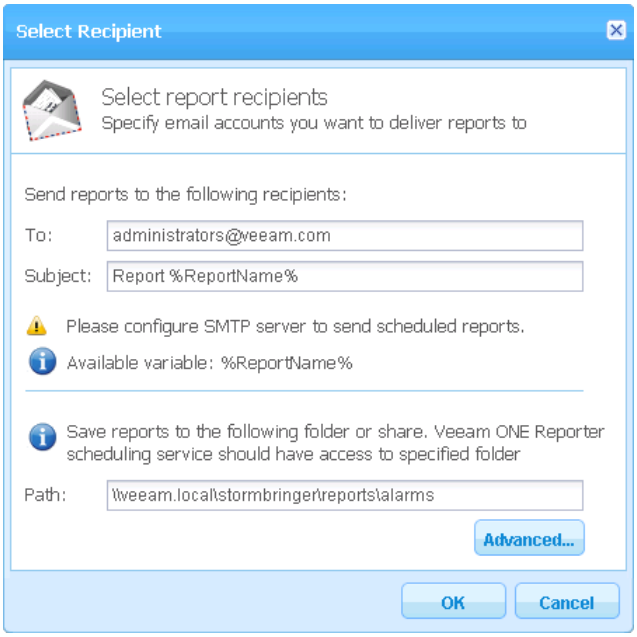


5. Click the link in the **Recipient** section to define how the report should be delivered. In the **Select Recipient** window, configure delivery settings:

   - If you want to deliver reports via email, enter the recipient's email address in the field **To** field. If you want to send generated reports to multiple recipients, separate email addresses with a semicolon.

     In the **Subject** field, enter the email subject title. You can use the *%ReportName%* variable in the subject line – Veeam ONE Reporter will substitute this variable with the name of a corresponding report.

Note To be able to send reports by email, make sure you specified SMTP settings. Refer to the SMTP Server Settings section for more details.



- To configure automated report delivery to on a hard drive and to a network share, enter the path to a local folder or provide a network path in the **Path** field. The address should lead to a folder that already exists. Veeam ONE Reporter will check if the specified folder exists and whether the folder is accessible to the Veeam ONE Reporter Server. If Veeam ONE Reporter detects any problems accessing the folder, a warning will be displayed next to the **Path** field.

Note Make sure that the account under which the *Veeam ONE Reporter Server* service runs has appropriate *write* permissions for the destination folder. Check properties of the *Veeam ONE Reporter Server* service and change the service account if required.

If you want to run a custom script after reports are delivered to the target folder, click the **Advanced** button. In the **File Name** field, specify a path to the file with the script. Running a custom script allows you to perform further manipulations after reports are generated.

6. After you configured all necessary settings, save changes.

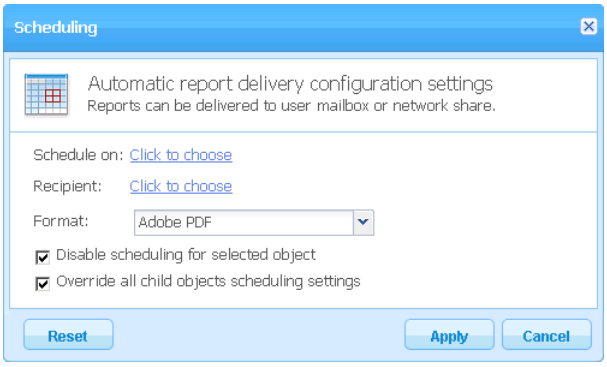
Scheduling Report Delivery for Multiple Reports

In addition to scheduling automatic report delivery for separate reports, you can also set the schedule for a number of reports that are included into the same folder.

To create a schedule for reports located in the same folder, follow the next steps:

1. In the **Reports** hierarchy, select a folder for which you want to define scheduling settings.
2. Click the **Schedule** command in the **Actions** pane on the right.

3. Configure scheduling settings as described in the in the Scheduling Reports section.



4. If you have previously configured automatic delivery settings for separate reports or subfolders included in the folder you can override such settings. To apply folder scheduling settings to all reports and subfolders included in the folder, select the **Override all child objects scheduling settings** check box. If you leave the check box cleared, the scheduling settings will be apply only to "unscheduled" reports – that is, to reports that do not have any scheduling settings yet.

Excluding Reports from Scheduling

If you have specified scheduling settings at the folder level, you can exclude specific reports from scheduling. Veeam ONE Reporter will not automatically generate and deliver excluded reports.

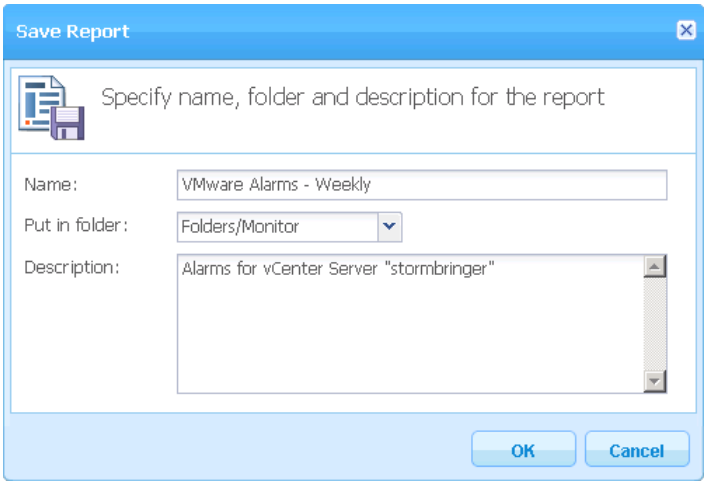
To exclude a report from scheduling, follow the next steps:

1. In the **Reports** hierarchy, select a report or a subfolder that you want to exclude from automatic delivery.
2. Click the **Schedule** command in the **Actions** pane on the right.
3. Select the **Disable scheduling for selected object** check box and save settings.

Copying Reports

Veeam ONE Reporter allows you to create copies of already existing reports, so you can have multiple copies of the same report with different parameters. To create a report, follow the next steps:

1. In the **Reports** hierarchy, select the report you want to copy.
2. Click the **Copy** command in the **Actions** pane on the right.
3. In the **Save Report** section, specify the name of the report, its description and select a folder to which the report copy should be saved.



After you create a report copy, modify the report parameters as described in the Editing Reports section.

Deleting Reports

If you no longer need a report, you can delete it. To delete a report, follow the next steps:

1. In the **Reports** hierarchy, select the report you want to delete.
2. Click the **Delete** command in the **Actions** pane on the right.
3. Click **OK** to confirm report deletion.

Important! After you delete a report, all dashboard widgets based on this report will become invalid.

Exporting Reports

Veeam ONE reporter allows you to export a report and save it to the RDL format. You can then import such reports to another Veeam ONE Reporter deployment.

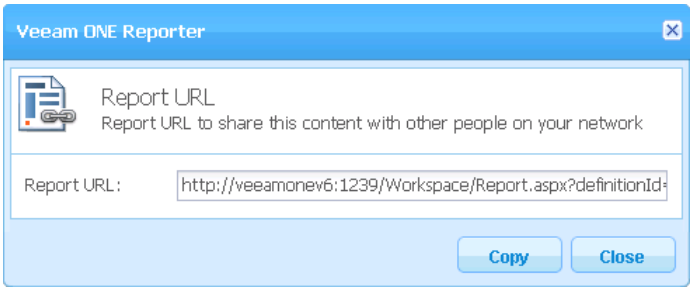
To export a report, follow the next steps:

1. In the **Reports** hierarchy, select the report for which you want to export
2. Click the **Export** command in the **Actions** pane on the right and save the RDL report.

Sharing Reports

If you want to share a report with other users, you can generate a direct report URL:

1. In the **Reports** hierarchy, select the report for which you want to generate a report URL.
2. Click the **Report URL** command in the **Actions** pane on the right.

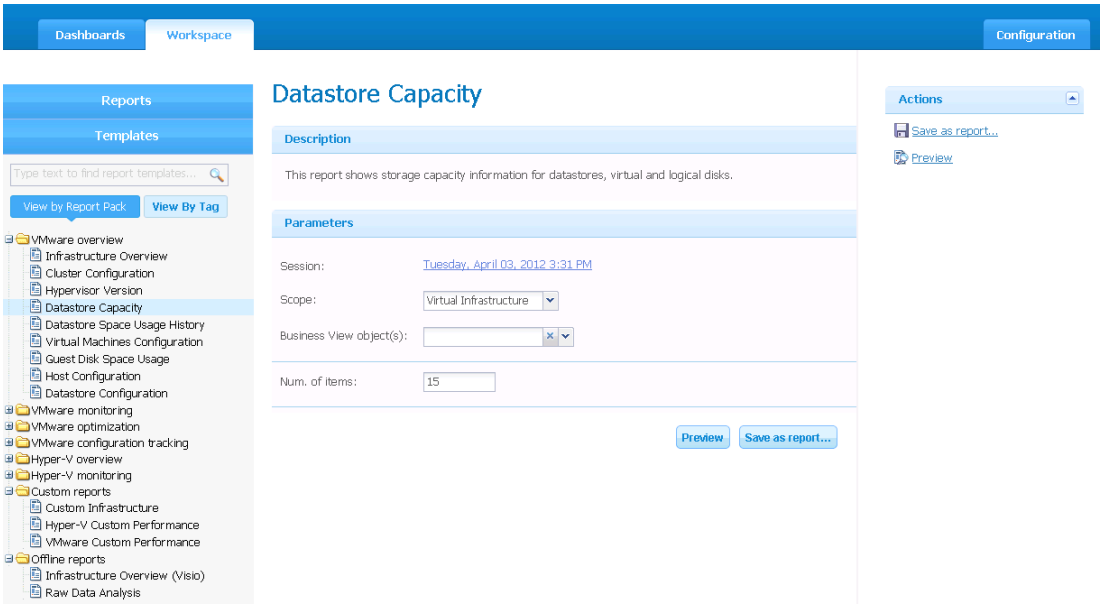


Working with Report Templates

Report templates focus on particular areas associated with running and supporting virtual infrastructures, for example, health, performance, growth and optimization issues. Templates comprise a set of parameters for specific aspects of virtual infrastructure operations. Report templates are grouped by report packs and by report tags – so you can access related templates and track similar functionality aspects.

The number of report templates for creating custom reports notably exceeds the number of saved reports available in the **Reports** section. Report templates allow users to create reports that track specific, user-defined properties of their environments that are not covered with pre-compiled, one-fits-all reports.

To access report templates, open the **Workspace** view and navigate to the **Templates** section.



Viewing Reports Based on Templates

To generate a report that is based on a report template, perform the following steps:

1. Select the necessary template in the hierarchy on the left.
2. Change report parameters or leave the default parameters if no changes are required. The set of report parameters depends on a template type.
3. Click the **Preview** command in the **Actions** pane on the right. Veeam ONE Reporter will open the created report in a pop-up browser window.

Viewing Offline Reports

Alongside regular reports that open in a browser, Veeam ONE offers a number of offline reports that can be generated and viewed later with the use of proprietary Veeam Report Viewer software. This capability offers a convenient tool to view key infrastructure information off-site in a disconnected mode, outside the bounds the current infrastructure or its networks.

Offline reports cover a variety of major health and configuration properties, allowing virtualization administrators to stay current with the latest virtual infrastructure events. Advanced topology maps that are not available with other competing products provide handy, automatically generated representation of your virtual infrastructure layout in a Visio file format.

Offline reports are located in the **Offline report pack** in the **Templates** section. You can reach them just like the other template-based reports are accessed. The process of offline report compilation is similar to creating regular reports, but differs in a way offline reports are viewed.

To view offline reports, Veeam Report Viewer software is required. To download Veeam Report Viewer, select an offline report template and click the **Download Veeam Report Viewer** link in the **Actions** pane. After downloading the installer file, follow the steps of the installation wizard to install Veeam Report Viewer.

Tip	Please uninstall the previous version of Veeam Report Viewer application to ensure full compatibility with Veeam ONE v6 reports.

The following steps describe how to access and view offline reports:

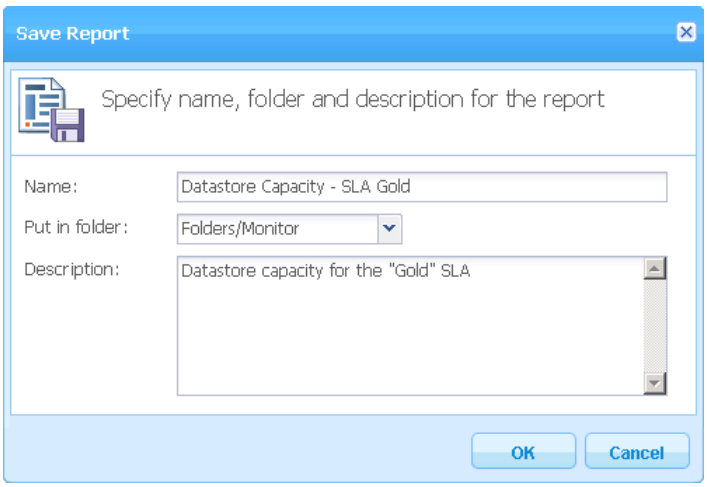
1. Select the desired report from the offline report pack.
2. Enter or modify report parameters.
3. Click **Preview** to generate a report file. In a few moments, the file with the **.vmr* extension will be generated and offered for download.

4. Open the downloaded file with Veeam Report Viewer.
5. Veeam Report Viewer will process data contained in the **.vmr* report and prepare individual reports.
6. The output results may contain data viewable in one or several Microsoft Office suite applications: Excel and Visio. Please ensure that you have appropriate software capable of opening such files.
7. Your new report will be opened. You can view or manipulate its contents to exert the data or pinpoint the details you need.

Creating Reports from Templates

Veeam ONE Reporter allows you to create reports based on available report templates and save them to the list of reports available in the **Reports** section of the **Workspace**. To create a report out of a report template and save it, follow the next steps:

1. Select the necessary template on the left.
2. Change report parameters or leave the default parameters if no changes are required. The set of report parameters depends on the type of a selected template.
3. Click the **Save as report** command in the **Actions** pane on the right.
4. In the **Save Report** window, specify the report name and description and select a folder to which you want to place the report.



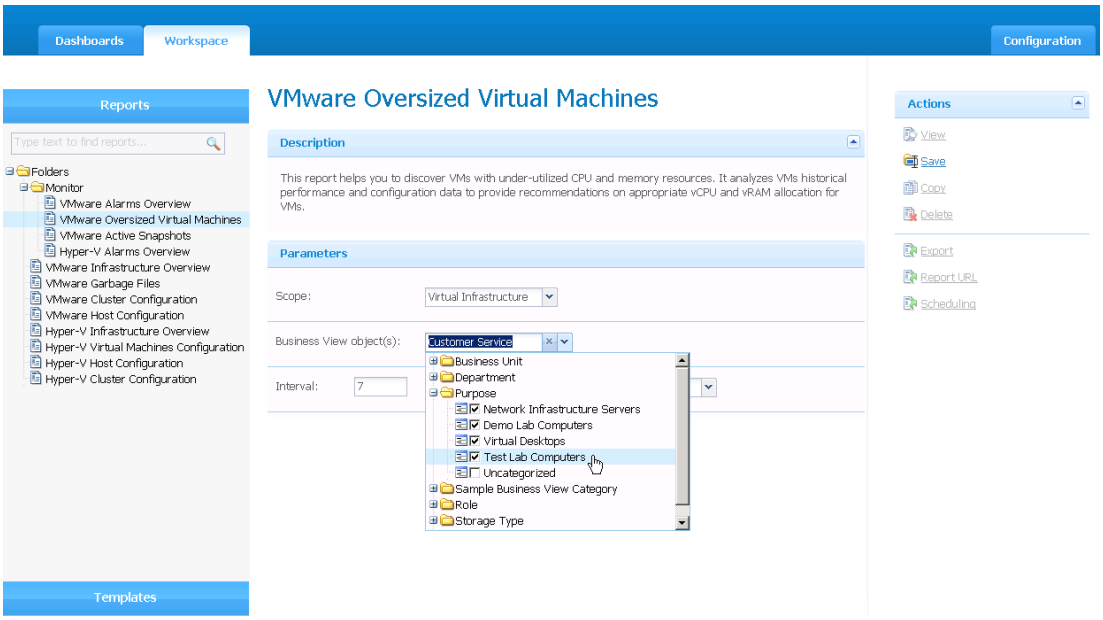
INTEGRATION WITH BUSINESS VIEW

Veeam ONE Reporter uses advantages of Veeam ONE Business View and allows you to create reports for business groups of virtual infrastructure objects.

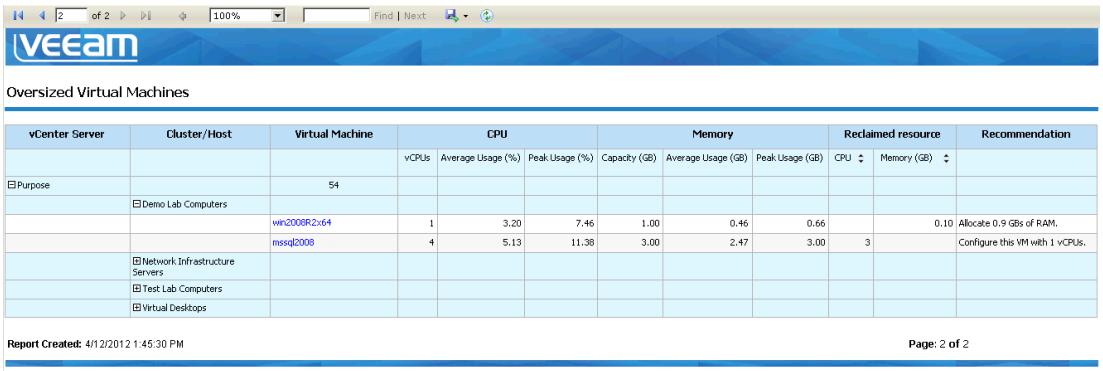
After you categorize your virtual infrastructure objects with Veeam ONE Business View, you can select created business group properties of reports or report templates. The reports will display only relevant information that covers these specific groups. This way, you can concentrate on specific areas and pinpoint exactly the pieces of information you require. For example, you can show department or business unit their allocated virtual resources or provide application teams with information about the health state of Exchange or SQL servers.

To create a report for business groups:

1. Select the necessary report or report template.
2. From the **Scope** list, select the level of the virtual infrastructure for which the report should be applied.
3. From the **Business view objects** list, select business groups for which you want to create a report.
4. Specify other report properties and run the report.



Veeam ONE Reporter will collect data from the specified virtual infrastructure level and present it from the business point of view – that is, for selected business group.



Oversized Virtual Machines

vCenter Server	Cluster/Host	Virtual Machine	CPU			Memory			Reclaimed resource		Recommendation
			vCPUs	Average Usage (%)	Peak Usage (%)	Capacity (GB)	Average Usage (GB)	Peak Usage (GB)	CPU	Memory (GB)	
⊟Purpose		54									
	⊟Demo Lab Computers										
		win2008R2x64	1	3.20	7.46	1.00	0.46	0.66		0.10	Allocate 0.9 GBs of RAM.
		mssql2008	4	5.13	11.38	3.00	2.47	3.00	3		Configure this VM with 1 vCPUs.
	⊞Network Infrastructure Servers										
	⊞Test Lab Computers										
	⊞Virtual Desktops										

Report Created: 4/12/2012 1:45:30 PM **Page:** 2 **of** 2

VEEAM ONE BUSINESS VIEW

OVERVIEW

Veeam ONE Business View – a part of an integrated Veeam ONE solution – allows you to categorize you virtual environment and display the virtual infrastructure topology from the business standpoint. With Veeam ONE Business View, you can gain business insight across numerous vCenter Servers and ESX(i) hosts in the virtual environment.

While VMware vSphere Client offers a set of views presenting virtual infrastructure hierarchy from a technical perspective (VMs and templates, datastores, networks and so on), Veeam ONE Business View builds a different categorization model – it presents data about VMs, hosts, storages and clusters in business terms, as they are categorized in your virtual infrastructure. Such insight from the enterprise perspective enables you to control, analyze and plan constantly developing and changing virtual environment.

Veeam ONE Business View features the following options and functionality:

Support for Heterogeneous Virtual Environments

Veeam ONE Business View is designed for professional use in VMware vSphere and Microsoft Hyper-V environments. Business categorization capabilities for VMware vSphere and Microsoft Hyper-V virtual environments are available from a single Veeam ONE Business View console.

vCenter Server Compatibility

Veeam ONE Business View is fully integrated with VMware VirtualCenter 2.5, vCenter Server 4.x and vCenter Server 5.

In its categorization model, Veeam ONE Business View uses the custom attributes feature of vCenter Server. vCenter Server custom attributes are mapped to Veeam ONE Business View categories – if required, you can configure Veeam ONE Business View to write categorization values from Veeam ONE Business View to custom attributes of VMs and hosts on the vCenter Server side. This possibility allows you to maintain the same categorization data in the Veeam ONE Business View and on the vCenter Server side. You can also integrate Veeam ONE Business View with third-party applications that read custom attribute values from the vCenter Server.

ESX(i) Server Compatibility

Veeam ONE Business View is fully compatible with ESX 3.5, 4.0 and ESXi 3.5, 4.0, 5.0.

Veeam ONE Business View not only supports work with vCenter Servers – you can also collect inventory data from standalone ESX(i) hosts and use collected information for categorizing VMs and storages.

Multi-User Access

Veeam ONE Business View enables multi-user access, allowing administrators, system integrators or stakeholders to view virtual infrastructure data and analyze the virtual environment from the business point of view.

Categorization Model

To build up a logical business representation of the virtual infrastructure, Veeam ONE Business View uses categories of VMs, hosts, storages and clusters that act as basic units for data analysis. With the help of categories, Veeam ONE Business View represents the virtual infrastructure from business perspectives.

Static and Dynamic Groups

Veeam ONE Business View offers two types of groups to categorize your virtual infrastructure: static and dynamic. To work with static groups, you need to create necessary groups within a category and either manually assign virtual infrastructure objects to groups or use categorization rules to populate these groups.

To create a dynamic group, you only need to specify a grouping expression. Veeam ONE Business View will automatically create groups based on the defined expression, and populate these groups with virtual infrastructure objects that match the specified criteria.

Unattended Data Collection

To collect information about virtual infrastructure, Veeam ONE Business View uses data collection jobs. When a job is run, Veeam ONE Business View collects data from vCenter Servers, ESX(i) hosts, re-applies categorization rules and updates dynamic groups to maintain the contents of your business groups up-to-date.

In case Veeam ONE Business View is configured to update vCenter Server custom attributes, when a collection job runs, Veeam ONE Business View not only collects data, but also writes category values to custom attributes of VMs and hosts on the vCenter Server side.

Note By default, Veeam ONE Business View only reads custom attributes from the vCenter Server; updates of custom attributes on the vCenter Server side are disabled. To learn how to enable attributes updates, refer to the Configuring Options section.

You may schedule to collect and write virtual infrastructure data periodically, or run data collection jobs manually on demand.

Data Export and Synchronization

Veeam ONE Business View offers advanced capabilities to synchronize business topology information with that from third-party software (for example, Active Directory). It lets you import and export data to and from a CSV file that holds infrastructure mapping data and acts as a medium between the two systems.

You can also export categorization data of the virtual infrastructure environment to a Microsoft Excel spreadsheet format.

Categorization Model

Veeam ONE Business View enables you to present your virtual infrastructure hierarchy from the organizational point of view and in terms that make sense to your business. This section describes the categorization model used in Veeam ONE Business View.

Categories and Groups

To display the virtual infrastructure from the business standpoint, Veeam ONE Business View uses categories and groups.

Categories help create logical business views of the virtual environment and display relevant business information. In terms of Veeam ONE Business View, a category is a logical division or a sector of the virtual infrastructure.

Every category includes a number of groups. A group is a collection of objects that have the same characteristics or match the same criterion from the business perspective. For example, for your virtual environment, you can create the following categories – *Department*, *Purpose*, *SLA* and so on. In the *Department* category, you can have the following groups: *Sales*, *Customer Service*, *Marketing*, *Development* and others.

As basic categorization elements, Veeam Business ONE View uses virtual infrastructure objects – VMs, hosts, storages and clusters. For example, the *Sales* group within the *Department* category can include all VMs that belong to the *Sales* department in your company. In a similar manner, the *Production* group within the *Purpose* category can include storages used for production purposes.

Veeam ONE Business View allows you to create static or dynamic groups within categories:

- **Static groups** are normally populated manually. To add a VM, host, storage or cluster into a static group, you should explicitly assign a category value to it. To automate population of static groups, you can use categorization rules. For details, see the Categorization Rules section.
- **Dynamic groups** are created automatically. To add objects to dynamic groups, you need to specify a certain condition. Veeam ONE Business View will create dynamic groups based on the specified condition, and automatically include virtual infrastructure objects into these groups. For example, you can specify an expression to divide hosts into two groups by the CPU speed - *Above 1 GHz* and *Below 1 GHz*. Veeam ONE Business View will automatically create the groups and distribute hosts among them. To learn more about working with dynamic groups, see the Adding Dynamic Groups section and Appendix B. Grouping Expression Syntax and Examples.

Veeam ONE Business View enables you to add virtual infrastructure objects to groups of different categories at the same time. For example, the same VM can belong to the *SQL Servers* group in the *Purpose* category and be a part of the *Marketing* group in the *Department* category.

Categorization Rules

Instead of adding virtual infrastructure objects to static groups manually, you can create categorization rules and assign them to static groups.

A categorization rule is a condition with which objects in the virtual server hierarchy comply or do not comply. Categorization rules can filter out and group objects by the following criteria: **By object name**, **By infrastructure location and By object properties**. For example, you can create a categorization rule that will place all VMs that have "market" in their name to the *Marketing* group of the *Department* category. Or you can create a categorization rule that will place all objects in the *Production* resource pool to the *Production* group of the *Purpose* category.

In Veeam ONE Business View, categorization rules work in the real-time mode: as soon as a categorization rule is created, it is immediately used to categorize objects in the virtual environment. The rule can prescribe to include all matching virtual infrastructure objects to a corresponding static group automatically, or to mark the objects as awaiting categorization approval. In the latter case, the matching objects are placed to a specific *Require Approval* group. For categorization of object in this group, the administrator's confirmation is required.

You can use categorization rules inversely. If you want to exclude a group of objects from business categorization, you can create an exclusive rule. Such a rule will not assign category values to matching objects – vice versa, they will exclude such objects from categorization.

Note Categorization rules can be used for grouping VMs, hosts and datastores, whereas clusters can only be categorized manually.

Categorization Data

Veeam ONE Business View can work with both vCenter Servers or standalone ESX(i) hosts.

If you add a connection to an ESX(i) host, Veeam ONE Business View collects data from the host to create an inventory of the host child objects – VMs and datastores. The collected data is stored to the Veeam ONE database and is used for categorizing VMs and datastores.

If you add a vCenter Server connection, Veeam ONE Business View collects data about virtual infrastructure objects to create an inventory of your virtual environment. At the same time, it collects all custom attributes and custom attribute values assigned to VMs and ESX(i) hosts. The collected data is stored to the Veeam ONE database that is used as a backend.

Veeam ONE Business View uses collected custom attributes and custom attribute values to configure the initial categorization scheme for your virtual environment. If you already use some vCenter Server custom attributes to categorize your virtual environment, you can map them to Veeam ONE Business View categories. Values of these mapped custom attributes can be adjusted

and used as groups of corresponding categories. For details, refer to the Mapping vCenter Custom Attributes to Business View Categories section.

You can synchronize categorization data stored in the Veeam ONE database with custom attributes of VMs and hosts on the vCenter Server side. To do so, you need to change Veeam ONE Business View configuration options to enable updates of custom attributes. In this case, every time when a collection job runs, Veeam ONE Business View will not only collect data from the vCenter Server, but will also write category values from the Veeam ONE database to the vCenter Server.

For example, if you group VMs by departments in Veeam ONE Business View, group values for VMs will be stored both in Veeam ONE database and will be also available as VM custom attributes on the vCenter Server side. This categorization data stored in vCenter custom attributes can be accessed and used by any external applications or scripts. To learn how to enable attributes updates, refer to the Configuring Options section.

If you do not want to write categorization information to custom attributes, you should leave custom attributes updates disabled. In this case, categorization information will be stored in the Veeam ONE database only; vCenter Server custom attributes will not be affected in any way.

Note Categorization data for datastores and clusters is stored only on the Veeam ONE Business View side and is not written to custom attributes on the vCenter Server.

Categorization Objects

As basic objects for categorization, Veeam ONE Business View uses virtual infrastructure objects – VMs, hosts, datastores and clusters. The following table summarizes limitations specific for every object.

Limitation \ Object	VM	Host	Storage	Cluster
Can be included to static groups manually	Yes	Yes	Yes	Yes
Can be included to static groups with categorization rules	Yes	Yes	Yes	No
Can be included to dynamic groups	Yes	Yes	Yes	No
Can store categorization data in vCenter Server custom attributes	Yes	Yes	No	No

Business View Integration

Veeam ONE Business View was designed primarily for integration with other applications for virtual infrastructure management. Coming as an integral part of the Veeam ONE solution, this component allows Veeam ONE Monitor and Veeam ONE Reporter to take advantage of business categorization.

Both Veeam ONE Monitor and Veeam ONE Reporter use categorization data of Veeam ONE Business View to build a business hierarchy of objects in the environment and perform their functions from a business standpoint. This allows you to extend virtual infrastructure management from technical terms (hosts, resource pools, clusters and so on) to any categorization model you require.

- **Veeam ONE Reporter** uses advantages of Veeam ONE Business View and provides reporting options for your virtual infrastructure presented in a business perspective. Veeam ONE Reporter meets real-world scenarios and allows generating reports for groups of VMs, hosts, clusters and datastores categorized on the basis of business unit, department, purpose, SLA and other business categories.

- **Veeam ONE Monitor** uses advantages of Veeam ONE Business View and allows monitoring and alerting of your virtual infrastructure presented in a business perspective. You can monitor your virtual infrastructure presented from the business perspective (that is, based on your company needs and priorities).

For detailed information monitoring and reporting capabilities for Veeam ONE Business View groups, refer to Monitoring Business View Groups and Integration with Business View sections.

Data Collection

To retrieve virtual infrastructure data necessary for building up the business topology from, Veeam ONE Business View uses data collection jobs.

When vCenter Server or an ESX(i) host is initially added to the application and a data collection runs, Veeam ONE Business View retrieves data about objects in your virtual infrastructure. For vCenter Servers, Veeam ONE Business View additionally retrieves a list of custom attributes for hosts and VMs and custom attribute values. Custom attributes are used as a means for initial categorization – if necessary, you can map existing custom attributes to business categories.

At subsequent job runs, Veeam ONE Business View retrieves data about new virtual infrastructure objects and new custom attributes from vCenter Server, and updates information in the Veeam ONE database. If you enable updates of custom attributes, Veeam ONE Business View also writes categorization values assigned to VMs and hosts back to corresponding custom attributes. Only values that have been changed since the last run of a job are updated.

Data collection jobs can be run manually or scheduled to be run at specific time on some week days, or with some periodicity. For more information, refer to the Collecting Data from VMware Servers section.

Accessing Veeam ONE Business View

To access Veeam ONE Business View, you can do one of the following:

- To access the Veeam ONE Business View console locally, on the server where Veeam ONE Web UI is installed, select **Start** > **All Programs** > **Veeam** > **Veeam ONE Business View** from the Windows **Start** menu.
- To access the Veeam ONE Business View console remotely using your Internet browser, browse to the following address (assuming the default port 1340):

  http://<veeamone_server_name>:1340

When connecting to the Veeam ONE Business View, you will receive a login prompt. To be able to access Veeam ONE Business View, you need to provide credentials of a user being a member of the *Veeam ONE Administrators* or *Veeam ONE Users* group (these are local groups created on the server where the Veeam ONE Server component is installed).

Note To be able to work with Veeam ONE Business View, make sure the web console site is included in the *'Trusted sites'* zone.

Main Views

To work with the virtual environment categorization data, Veeam ONE Business View offers a set of views intended for performing different activities.

- The **Dashboard** view displays summary information about objects in your environment. It acts as a basic monitoring panel that provides an overview of the virtual infrastructure and the categorization model.

- The **Workspace** view is the main working area of Veeam ONE Business View. It lists all objects with their categorization data and allows you to view and edit data, as well as export VI business topology information to a Microsoft Excel spreadsheet.
- The **VM**, **Host**, **Storage** and **Cluster** views display information about the business topology of your virtual environment. These views act as detailed monitoring panels: they present the virtual environment data from the perspective of business view categories. The categorization data is presented both in graphic charts and tables. Every graph in these views displays information about the total number of VMs/hosts/datastores/clusters that relate to specific groups, and the total of used resources, such as vCPU, memory and storage for these objects united into a group.

  Using these views, you can also confirm object categorization as well as export a list of objects that are not categorized yet and require additional review to a Microsoft Excel spreadsheet. To learn more about activities that can be performed in the **Dashboard**, **VM**, **Host**, **Storage** and **Cluster** views, see the Working with Dashboards section.
- The **Configuration** view is intended for configuring basic application settings: defining rules, working with categories and groups, running data collection jobs, adding VMware servers, changing the application's options, using the export, import and synchronization features. The **Configuration** view is a take-off point – to start working with Veeam ONE Business View, you should first configure all necessary settings and run data collection jobs. To learn more about activities that can be performed in the **Configuration** view, see the Configuring Veeam ONE Business View section.

CONFIGURING VEEAM ONE BUSINESS VIEW

To start working with the Veeam ONE Business View component, you need to perform a number of steps for its initial configuration:

1. Connect VMware servers to Veeam ONE Business View. This step is not required if you have already configured connections to virtual infrastructure management servers.
2. Start collection jobs to collect data from added virtual servers. You can schedule data collection jobs or collect data from connected servers manually.
3. Set up your categorization model. You can add categories, outline static or dynamic groups within every category, and configure categorization rules.
4. Configure import/export settings if you need to map vCenter custom attributes to Veeam ONE Business View categories, or if you want to synchronize Veeam ONE Business View categorization values with data rendered by other applications.
5. Change Veeam ONE Business View options if necessary.

All initial configuration tasks can be performed using the **Configuration** view of the application. To switch to the **Configuration** view, click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.

Note The **Configuration** view can be accessed only by users being members of the *Veeam ONE Administrators* groups. To learn more about Veeam ONE user groups and privileges, refer to *Veeam ONE Deployment Guide*.

Connecting VMware Servers

First of all, you should connect vCenter Server(s) or standalone ESX(i) hosts from which you want to collect virtual infrastructure data.

This step is not required if you have already connected the necessary vCenter Server as a default VMware server during Veeam ONE installation, or if you have previously connected vCenter Server(s) or hosts via Veeam ONE Monitor or Veeam ONE Reporter interface.

To connect a VMware server, follow the next steps:

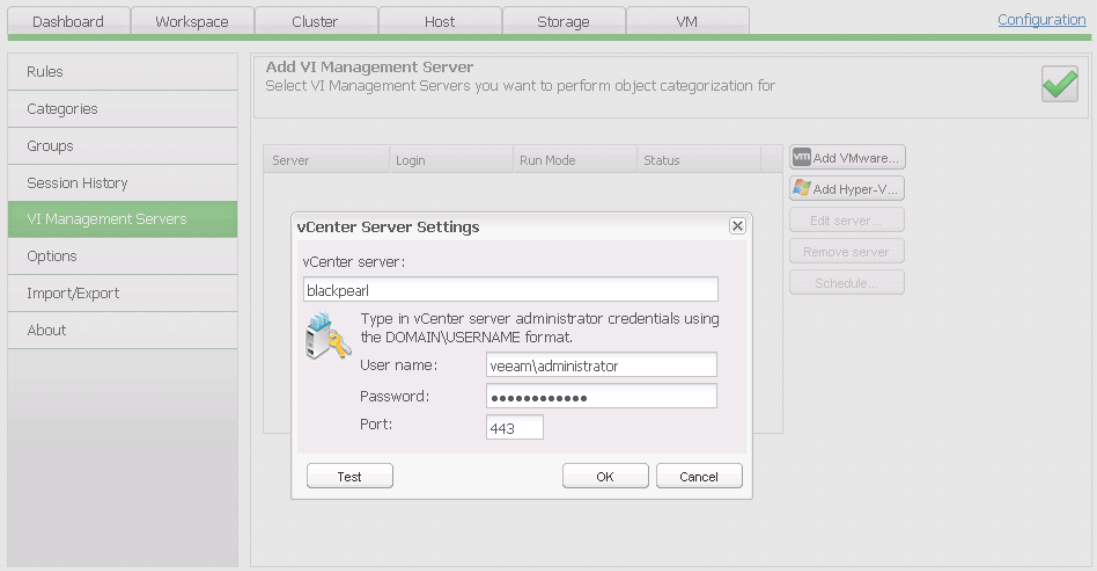
1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **VI Management Servers** on the left of the **Configuration** view.
3. Click the **Add VMware** button in the **Add VI Management Server** section.
4. Specify connection settings for the server:
   - Name or IP address of the vCenter Server or ESX(i) host
   - Credentials of the account in the *DOMAIN\USERNAME* format
   - Port number (443 by default)

Note If you plan to update custom attributes on the vCenter Server side, the account used to connect a vCenter Server must the *Global.Manage custom attributes* and *Global.Set custom attribute* permissions. If you disable custom attributes updates on VMs and hosts, this permission will not be required. For details on required permissions, refer to *Veeam ONE Deployment Guide*.

5. With Veeam ONE Business View, you can verify connection settings before you add the server. To check if you have entered correct data, click the **Test** button. Veeam ONE

Business View will display a notification informing if the data you provided is correct or not.

6. Click **OK** to add the server.



If you need to add several vCenter Servers or ESX(i) hosts, repeat the procedure described above for every VMware server you want to connect.

If you want to edit connection settings, select a VMware server in the list and click the **Edit server** button on the right. To remove a connection to a VMware server, select the server in the list and click the **Remove server** button.

Collecting Data from VMware Servers

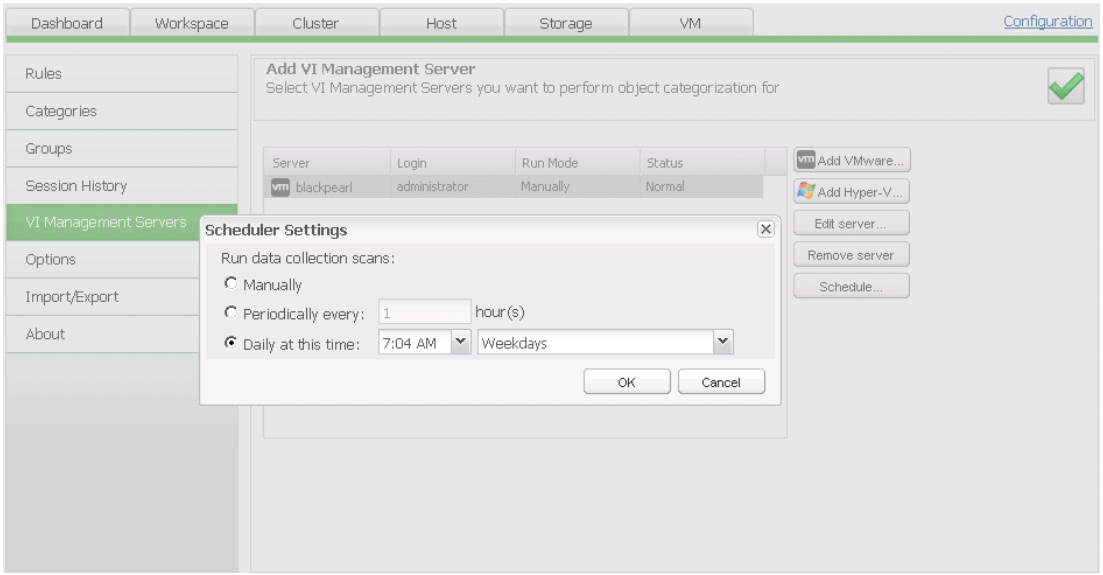
After you have added VMware servers, you should specify a schedule for a data collection job – that is, define the time frame when Veeam ONE Business View will scan the virtual server hierarchy, retrieve the topology of virtual infrastructure objects and collect data.

There are two modes of running data collection jobs — manual and scheduled. Right after you add a VMware server, the collection mode is set to *Manually* by default. In this mode, you will have to run the job manually. However, you can set a data collection schedule if you want to start the job automatically according to a specific schedule.

Scheduling Data Collection

You can automate data collection by scheduling a collection job for a specific VMware server. To change the collection mode to *Scheduled* and define the time settings, follow the next steps:

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **VI Management Servers** on the left of the **Configuration** view.
3. Select the necessary VMware server in the list click the **Schedule** button.
4. Schedule a data collection job for the server:
   - If you are planning to run the data collection job at some time intervals, select the **Periodically every… hour(s)** option and define the necessary interval.
   - If you want to run the data collection job at specific time, select the **Daily at this time** option, enter the time and week days on which the job should be run.
5. When you set up a schedule, click **OK**.



To view details on performed collection sessions, click **Session History** on the left of the **Configuration** view.

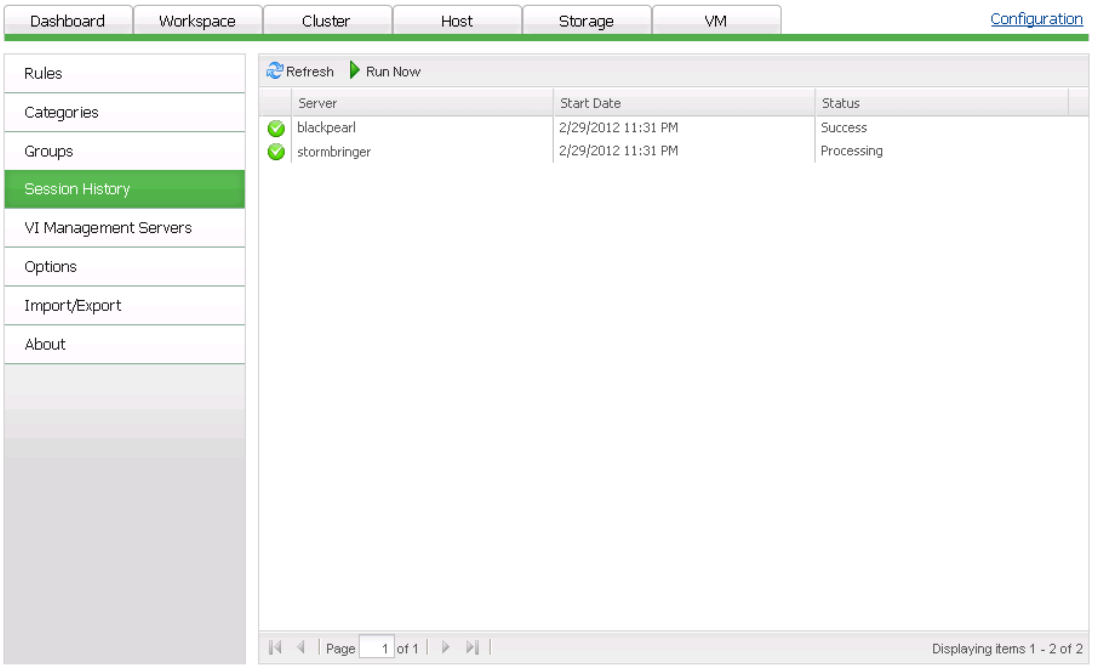
Collecting Data Manually

As an alternative to automatic scheduled data collection, you can collect data from VMware servers manually.

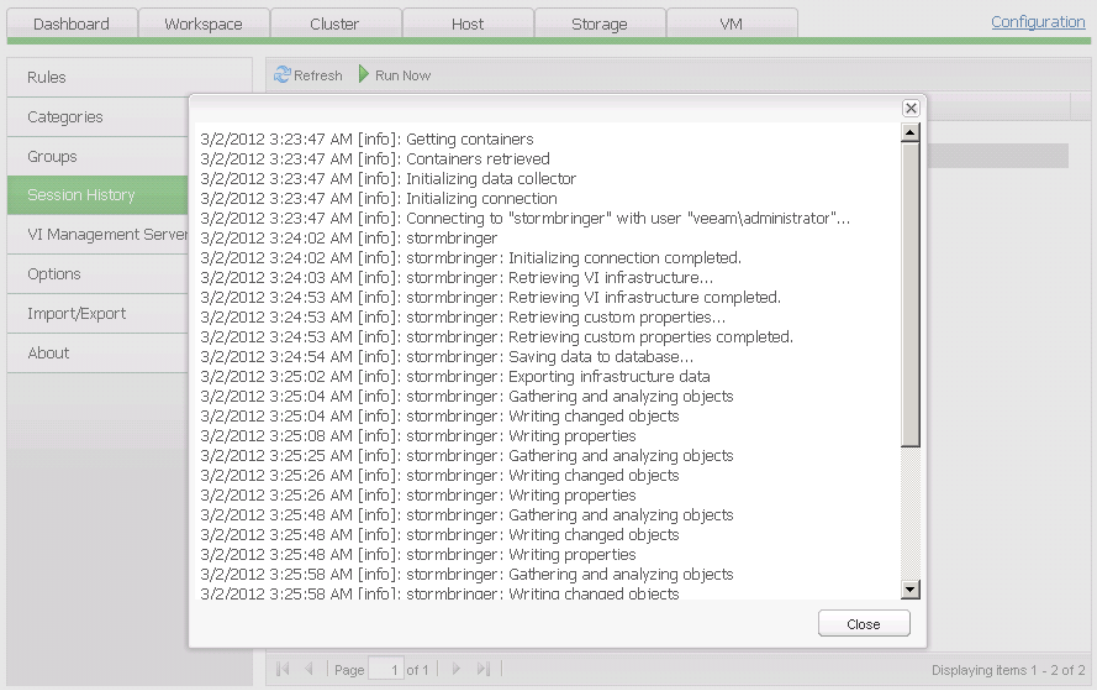
To collect data from a VMware server manually, follow the next steps:

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Session History** on the left of the **Configuration** view.
3. Click the **Run Now** button. Data collection may take a few minutes.

Note When you start any collection job manually, Veeam ONE Business View retrieves custom attribute data for all VMware servers that you added.



To view a detailed session data, click a necessary entry in the list.



Configuring Categorization Scheme

After you have connected VMware servers and run data collection jobs, you need to configure your categorization scheme:

1. Create categories that describe logical divisions, or sectors, of your virtual infrastructure from the business standpoint.
2. For every category, create groups that will act as containers for virtual infrastructure objects. These can be either static or dynamic groups.
3. If you choose to work with static groups, you can additionally create categorization rules and assign them to specific groups. Using categorization rules, you will be able to automatically populate static groups with virtual infrastructure objects.
4. If you are already using vCenter Server custom attributes to categorize your virtual infrastructure, you can synchronize the Veeam ONE Business View categorization scheme with the categorization scheme you are using on the on the vCenter Server side.

Creating Categories

To start categorizing your virtual environment, you should define what categories should be used to present your virtual infrastructure from the business standpoint.

By default, Veeam ONE Business View creates four categories for categorizing VMs — *Business Unit*, *Department, Purpose* and *Sample Business View Category*. You can add your own categories (up to 25) and delete unnecessary ones to create your own business view categorization scheme.

To add a new category, follow the next steps:

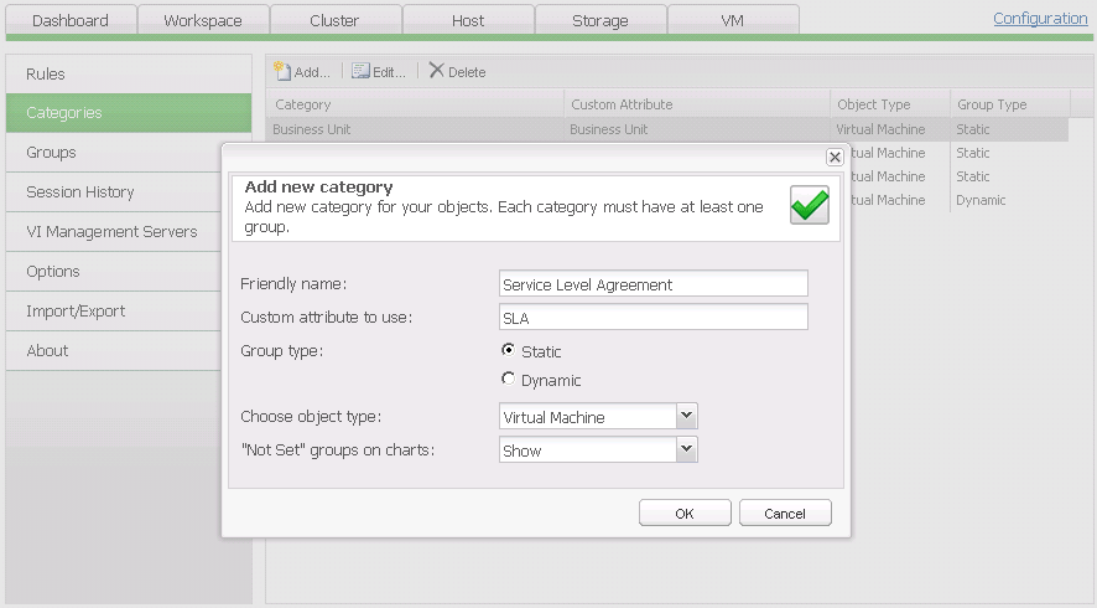
1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Categories** on the left of the **Configuration** view.
3. Click the **Add** button at the top of the category list.
4. In the **Friendly name** field, enter the name for a category.

This name will be displayed as a label for the category graph on the **Dashboard**.

5. In the **Custom attribute to use** field, enter the name of a vCenter Server custom attribute to which the category will be mapped. If you are not planning to enable custom attributes updates on the vCenter Server side, you still need to fill out this field. The specified values will be stored in the Veeam ONE database; when you enable updates to vCenter Server, the specified custom attributes will be written to vCenter Server.
6. From the **Group type** list, select the type of groups which can be created within the category – static or dynamic.
7. From the **Choose object type** list, select the type of virtual infrastructure objects that will be described with this category – cluster, host, datastore, virtual machine or all types of objects.

Note If you choose cluster as the object type, you will be able to create only static groups within the category. It is not possible to create dynamic groups for categorizing clusters.

8. Use the **"Not set" group on charts** list to define whether it is necessary to display on charts information about uncategorized objects.
   - If you select *Show*, data on uncategorized objects will included into charts and labeled as "Not set".
   - If you select *Hide*, data on uncategorized objects will be hidden from charts.
9. Click **OK** to add the new category.



To edit a category, select it in the list and click the **Edit** button at the top of the list. Note that in the edit mode, you cannot change the group type or select a different object type for a category with dynamic groups.

To delete a category, select it in the list and click the **Delete** button at the top of the list.

Note If a category contains at least one group, you cannot delete it. You need to delete all static groups or remove the grouping expression for dynamic group first. Then, you can delete the empty category.

Creating Groups

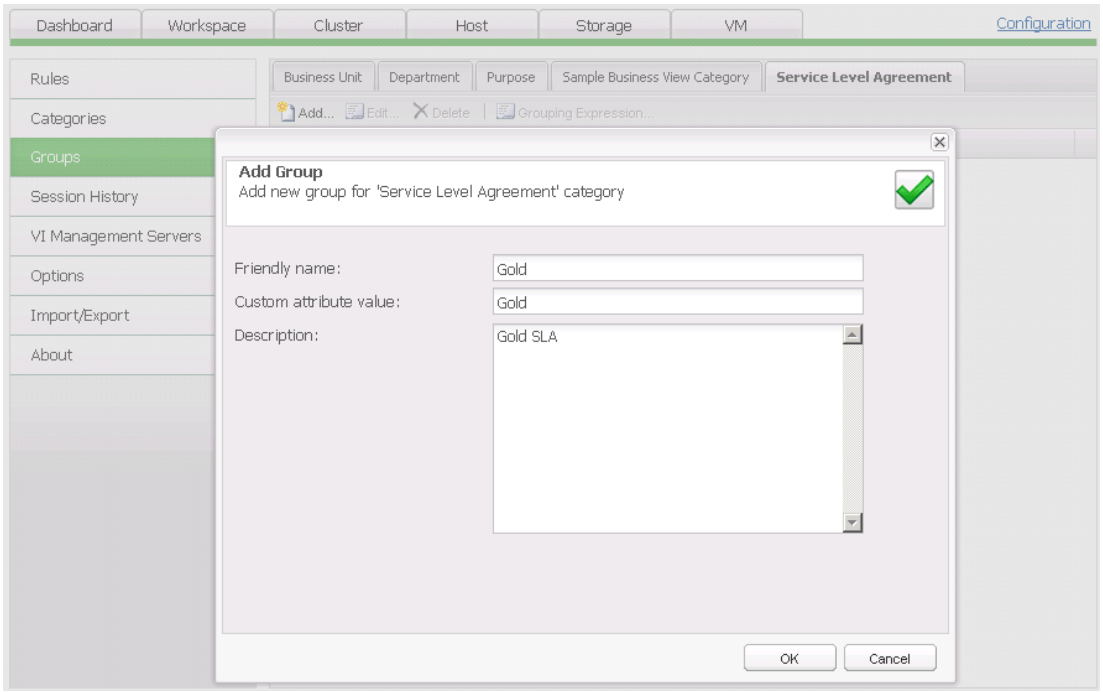
After you have created categories, you need to configure groups within every category. With Veeam ONE Business View, you can create the following types of groups:

- **Static groups**: to populate static groups with virtual infrastructure objects, you can either manually assign objects to a specific group or use categorization rules to populate groups based on certain criteria.
- **Dynamic groups**: these groups are populated automatically based on a certain conditional expression. When you define a specific expression, Veeam ONE Business View automatically analyzes properties of virtual infrastructure objects, creates necessary groups and distributes objects among these groups.

Adding Static Groups

To create a static group, follow the next steps:

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Groups** on the left of the **Configuration** view.
3. Select a category within which you want to create a group. All existing categories are shown as tabs at the top of the group list – to add groups to a specific category, open the necessary tab.
4. Click the **Add** button at the top of the group list.
5. In the **Friendly Name** field, enter the group name. The name will be displayed as a label of the group on the **Dashboard**.
6. In the **Custom attribute value** field, specify the value for the custom attribute that is mapped to the parent category. When you assign a virtual infrastructure object to this group and run a data collection job, this value will be written to a corresponding custom attribute on the vCenter Server side. If you are not planning to enable custom attributes updates on the vCenter Server side, you still need to fill out this field. The specified values will be stored in the Veeam ONE database; when you enable updates to vCenter Server, the values will be written to custom attributes in vCenter Server.
7. In the **Description** field, enter the description for the created group.
8. Click **OK** to save the new group for the current category.



To edit a group, select it in the list and click the **Edit** button at the top of the list. To delete a group, select the group in the list and click the **Delete** button.

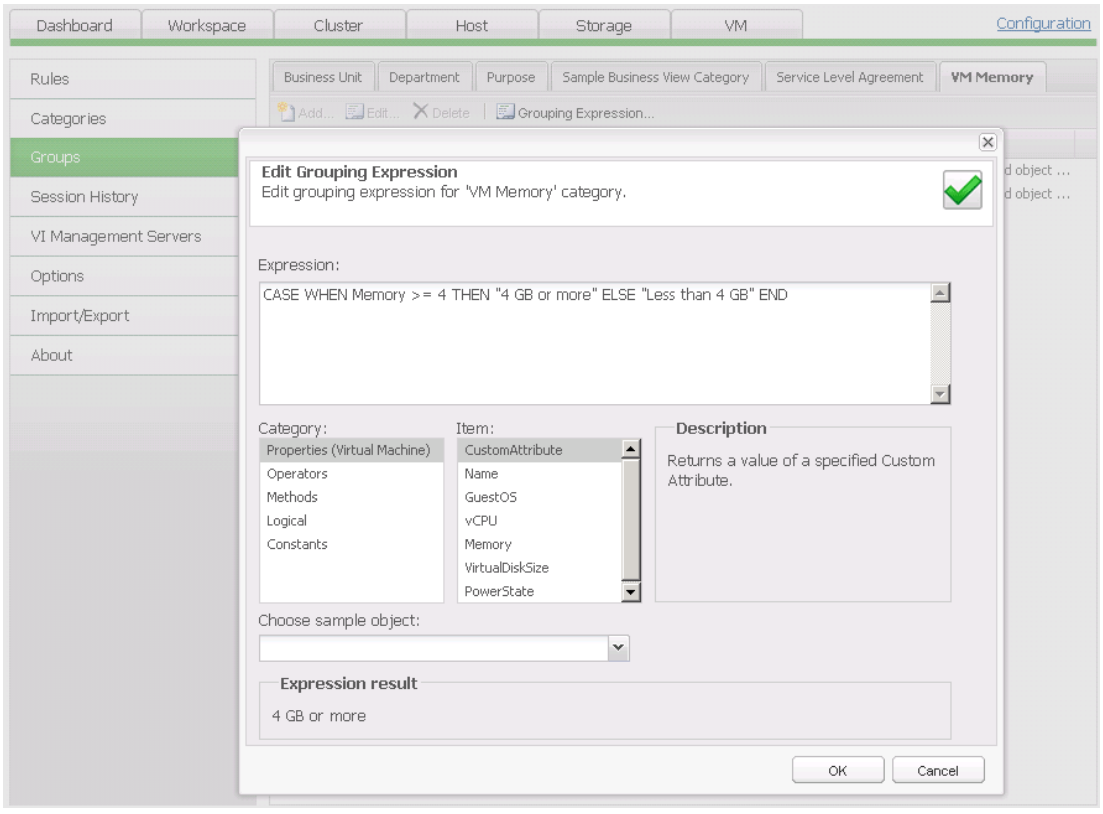
Important! If there are any rules associated with a specific group, Veeam ONE Business View will not allow you to delete the group until all associated rules are deleted.

Adding Dynamic Groups

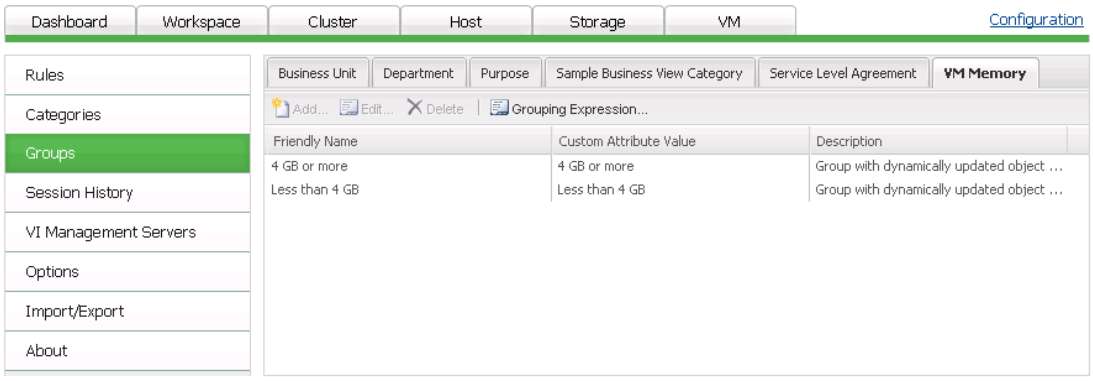
Dynamic groups are based on grouping expression. To define create a dynamic group, follow the next steps:

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Groups** on the left of the **Configuration** view.
3. Select a category within which you want to create a group. All existing categories are shown as tabs at the top of the group list – to add groups to a specific category, open the necessary tab.
4. Click the **Grouping Expression** button under an existing dynamic group type category in the **Groups** section.
5. In the **Edit Grouping Expression** window you can type the expression directly or use the lists at the bottom to set up the expression. See Appendix B for details on the syntax of grouping expressions and examples.

   At the bottom of the window you can see what the result of the expression will look like for a random object. If you would like to see the expression result for a specific object (a specific VM, host, cluster or datastore), type the name of the object in the **Choose sample object** field.
6. Click **OK** to save changes.



After you save the grouping expression, Veeam ONE Business View will run the expression against virtual infrastructure objects that you have specified in the category properties. Results returned by the grouping expression will be displayed as category groups.



Dynamic groups cannot be edited or deleted manually. To edit dynamic groups, update the grouping expression as necessary. To delete all groups from the dynamic group type category, clear the grouping expression from the **Expression** field.

Configuring Categorization Rules

To automate population of static groups with virtual infrastructure objects, you can create categorization rules.

A categorization rule is a condition associated with a specific static group. The condition is checked against virtual infrastructure objects: if an object meets the condition, it is included in the static group automatically. Alternatively, the object can be placed to the *Require Approval* group, awaiting the administrator's confirmation to be categorized.

Note Categorization rules can only be used for VMs, hosts and datastores. Clusters should be added to static groups manually.

To create a categorization rule for a static group, follow the steps described below.

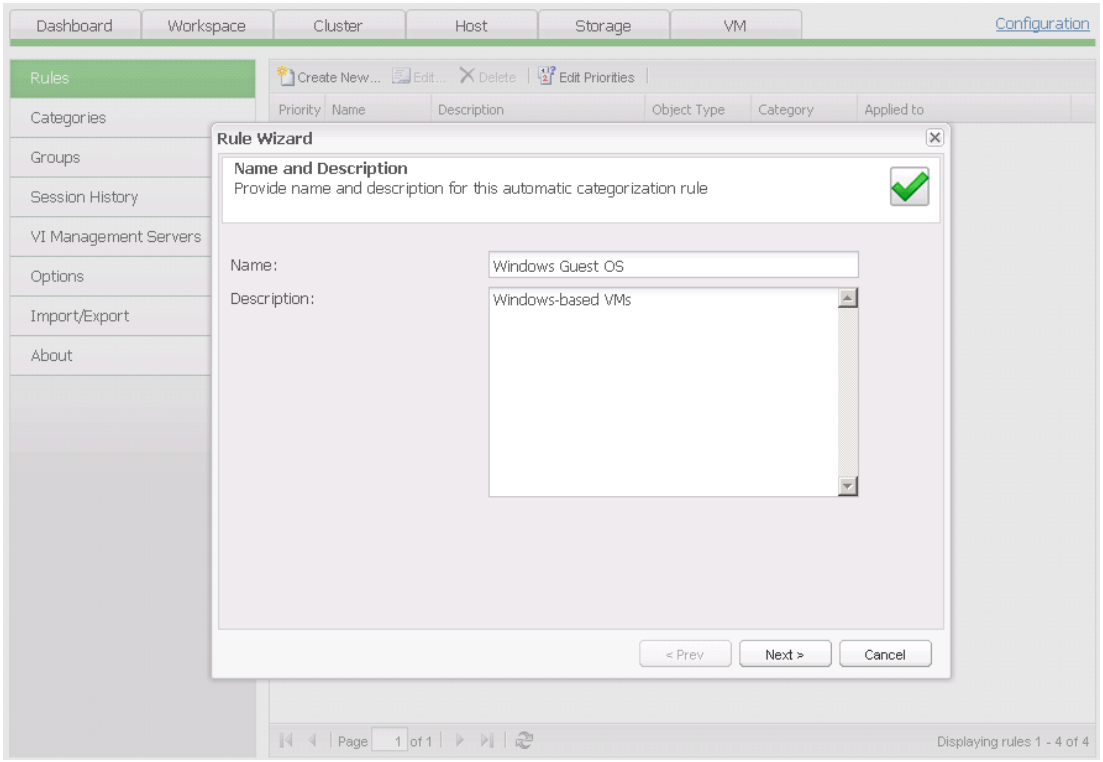
Step 1. Launch the Rule wizard

To create a new categorization rule, launch the **Rule** wizard:

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Rules** on the left of the **Configuration** view.
3. Click the **Create New** button on the toolbar above the list of rules.

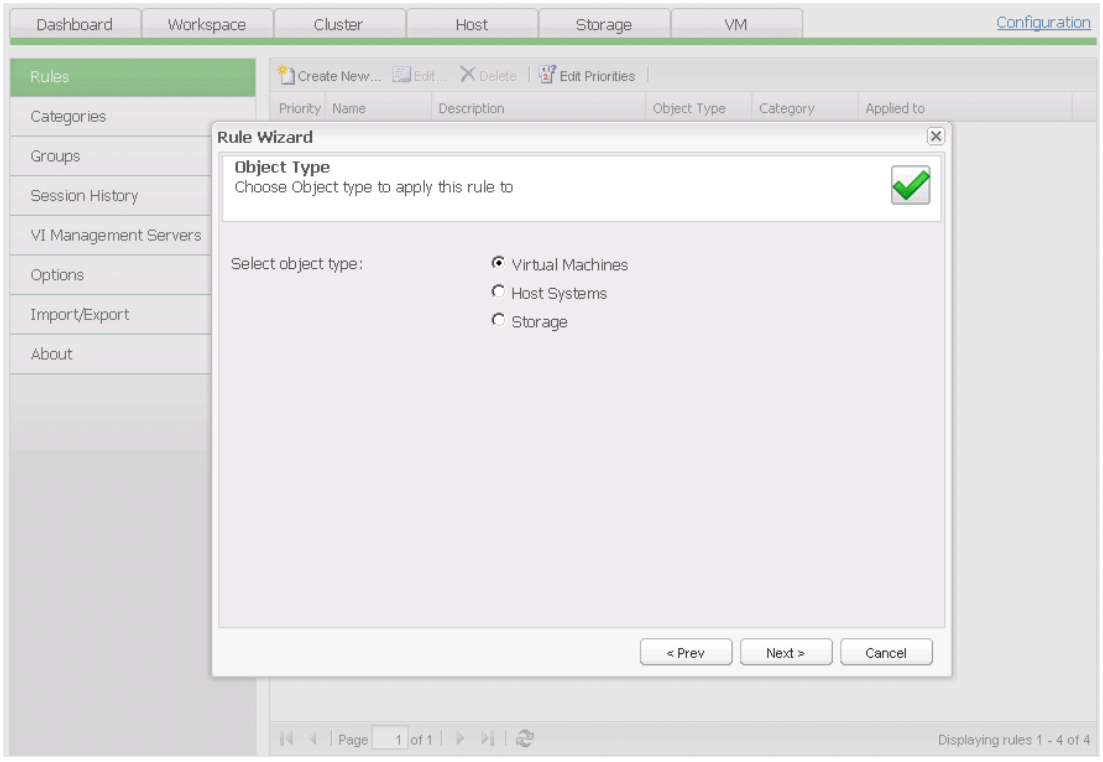
Step 2. Specify rule name and description

At the first wizard step, enter basic information for the created rule — name and description.



Step 3. Select the object type

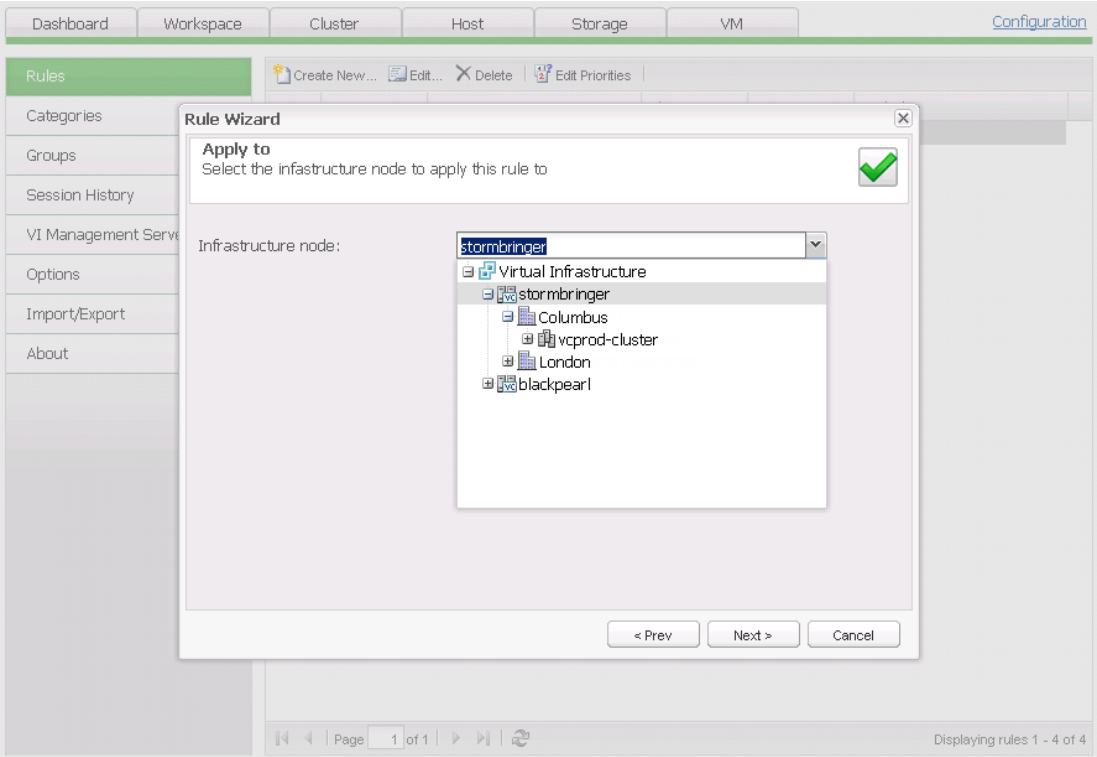
Select the type of virtual infrastructure objects to which the created rule should be applied – virtual machines, ESX(i) hosts or datastores.



Step 4. Select infrastructure level

Select the level of the virtual infrastructure on which the created rule will be used. Select the necessary node of the virtual environment hierarchy tree.

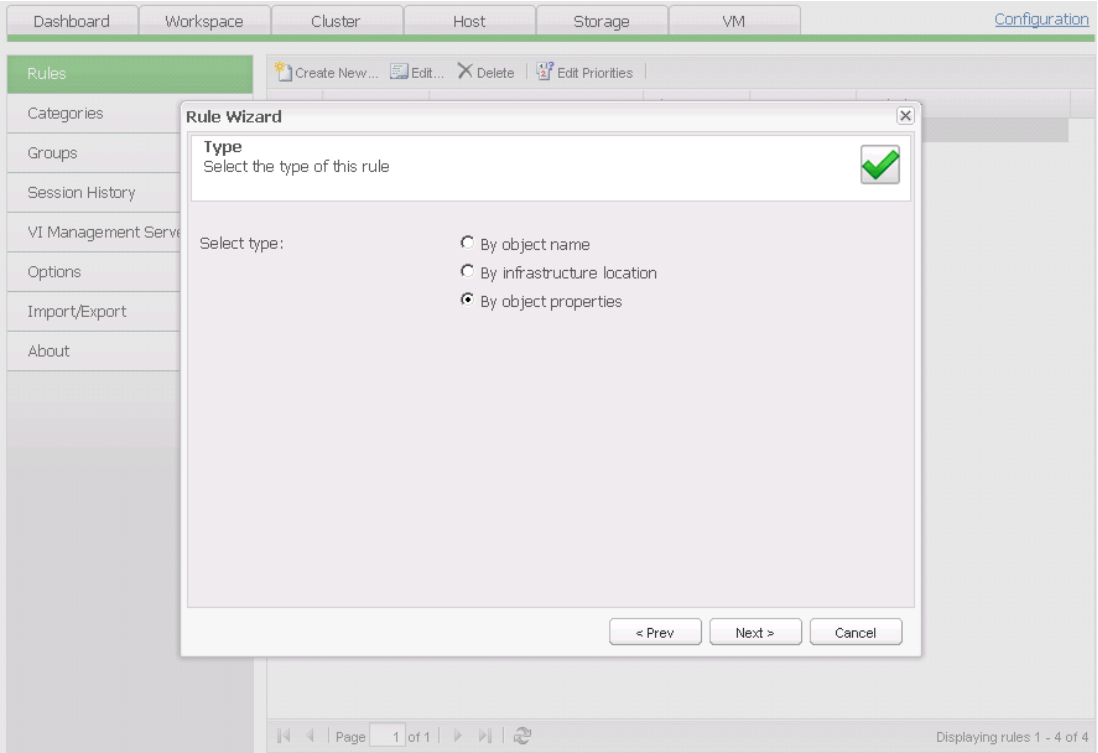
Keep in mind the type of object selected at the previous step. For example, it makes no sense to select a resource pool node when creating a rule for hosts or datastores.



Step 5. Select the rule type

Select the type of the created rule. You can choose one of the following options:

- **By object name** – select this option if you want to create a condition that will be checked against names of virtual infrastructure objects.
- **By infrastructure location** – select this option if you want to include in a static group objects that belong to a specific level of the virtual infrastructure hierarchy (the level you specified at the previous step of the wizard). For example, you can use this type of rule to include in a group all VMs belonging to a specific cluster, resource pool or folder in the vCenter Server hierarchy.
- **By object properties** – select this option if you want to include in a group objects based on certain object properties. For example, you can filter out VMs by such properties as amount of memory, guest OS, virtual disk size, and so on.

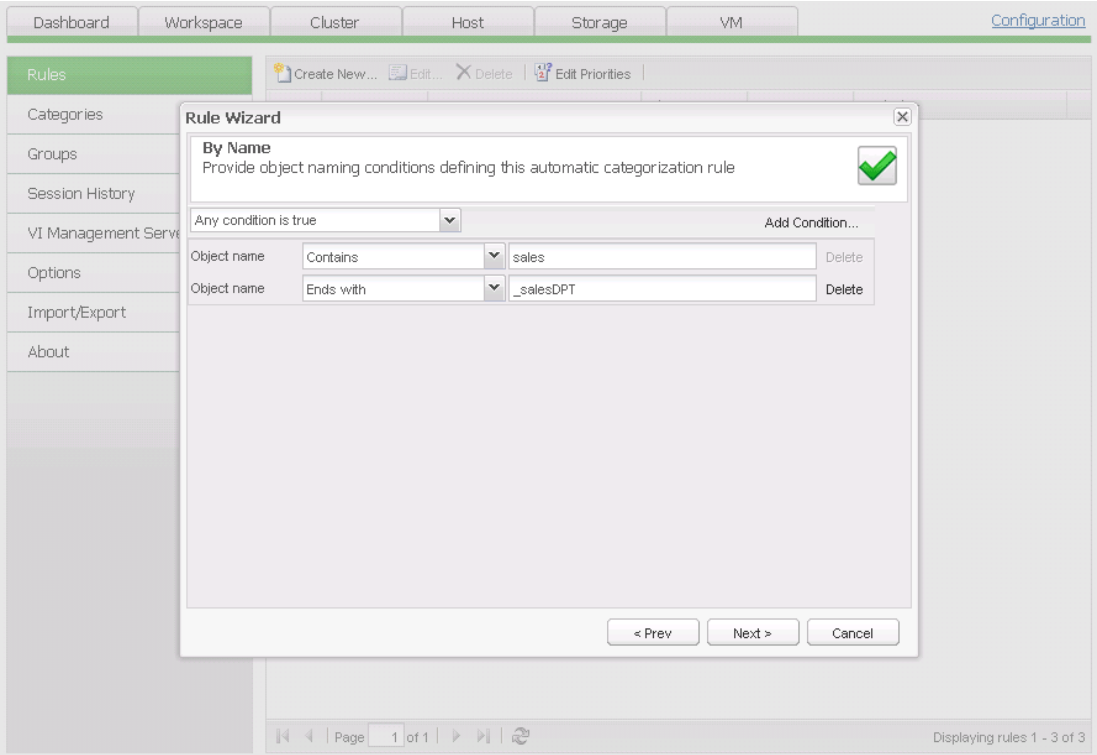


Step 6. Specify the rule condition

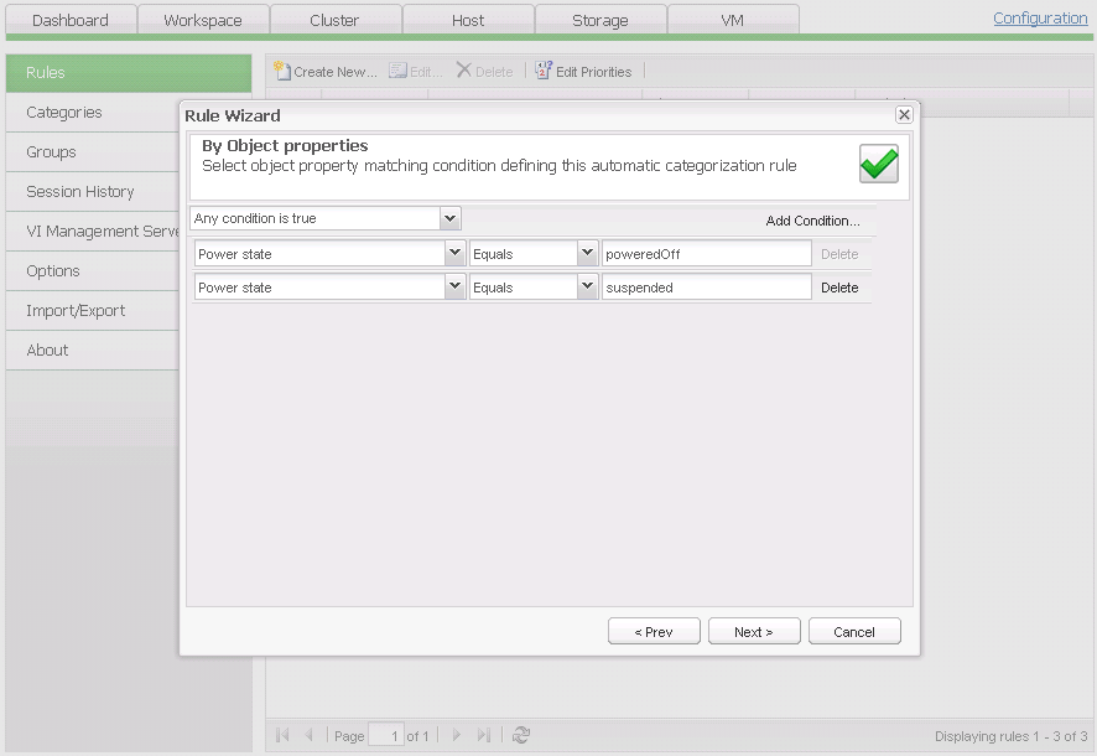
At this step, you should specify a condition for the rule. The condition will be checked against virtual infrastructure objects – if an object meets the condition, it will be included in the static group.

You need to specify the rule condition if you selected the **By object name** or **By object properties** option at the previous step of the wizard. If you selected the **By infrastructure location** type of rule, you will pass immediately to Step 7.

If you chose to group objects by name, enter a text pattern and specify a condition using the **Contains**, **Does not contain**, **Starts with**, **Ends with** or **Wildcard** matching operators. Please keep in mind that rules of this type are not case sensitive.



If you chose to group objects by object properties, create a condition using virtual infrastructure object properties: select an object property, choose a conditional operator and specify a value that will be checked in the condition. Note that decimal values are not allowed.



If necessary, you can combine several conditions. Use the **Add Condition** button at the top right corner to add new conditions to the list. From the topmost list, select logical relationships between the conditions: specify whether the rule should be applied only when all conditions are true or whether the rule should be applied when any condition is true.

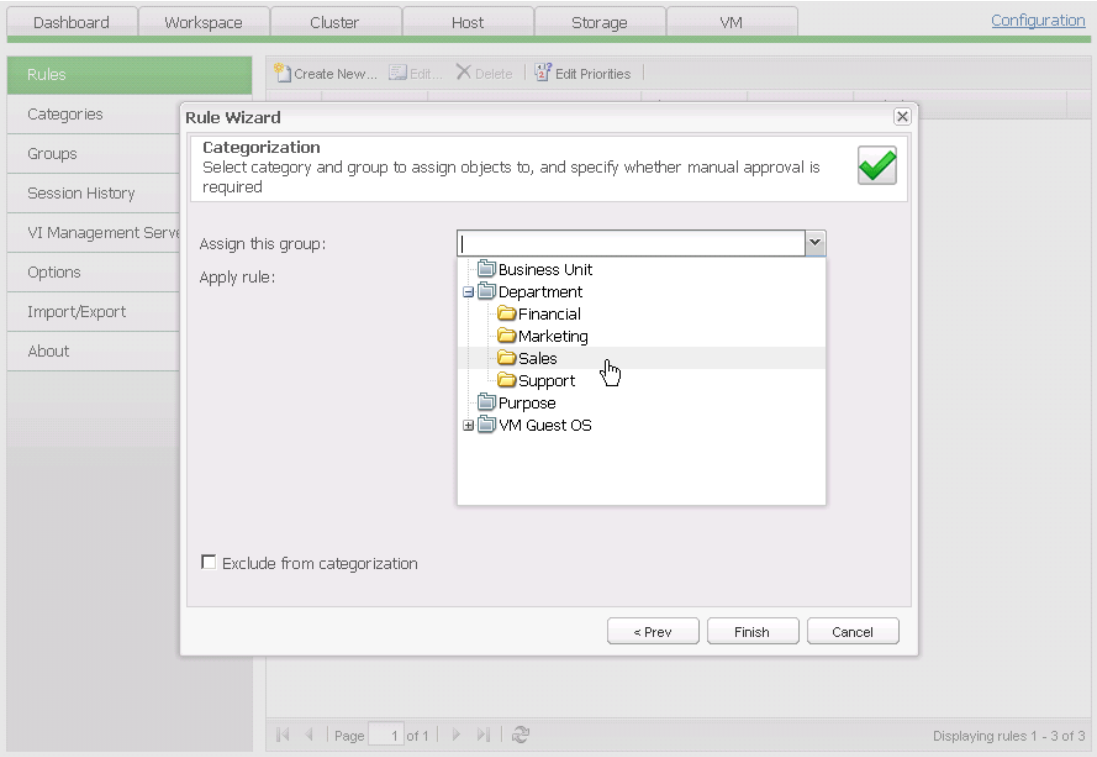
Step 7. Select the rule action

At this step of the wizard, you should select a static group in which virtual infrastructure objects will be included if they match rule conditions. You should also define the type of approval for including objects in the group.

From the **Assign this group** list select a category and a static group in which virtual infrastructure objects that match specified conditions should be included.

From the **Apply rule** list select the type of approval for including virtual infrastructure objects in the group:

- If you select the **Automatically** option, an object that matches rule conditions will be included in a group automatically, as soon as it is detected in the virtual server hierarchy.
- If you select the **Require manual approval** option, an object that matches rule conditions will not be included in the group automatically. Instead, it will be placed to the *Require Approval* group. The administrator will need to confirm categorization manually to include the object into the group. To learn more about the confirmation, see the Confirming Categorization section.



To create an exclusive rule, you can select the **Exclude from categorization** check box. In this case, all objects that comply with the rule conditions will be excluded from the categorization scheme.

Step 8. Finish working with the wizard

After you have specified all required rule settings, click **Finish**. Categorization rules work in real-time mode: as soon as a categorization rule is created, it is immediately used to categorize VMs, hosts and datastores in the virtual environment.

Note If you have enabled custom attributes updates in the **Options** section, the categorization values set for VMs and hosts will be written to custom attributes on the vCenter Server side only at the next run of a data collection job. Categorization data for datastores and clusters will not be written to custom attributes on the vCenter Server side, as it is stored in the Veeam ONE Business View database only.

Setting Rule Priorities

When you add more than one rule for categorization, you can set priorities according to which rules should be applied. The priority of a rule defines the rule importance: if two or more rules apply to the same object, a rule with a lower priority level is overridden with the rule of a higher priority.

Rules with higher priority are displayed higher in the list. Veeam ONE Business View assigns a specific priority value to every rule: 1 is assigned to the most important rule, 2 – to a less important rule and so on.

To change the priority levels of categorization rules, click the **Edit Priorities** button on the toolbar. Use arrows in the leftmost column to move the rules up and down the list to change their priority level.

Note Rules which exclude objects from categorization (the **Exclude from categorization** check box is selected at the last step of the **Rules** wizard) are not prioritized and will always override other rules.

Configuring Import and Export Settings

If required, you can synchronize categorization data stored in the Veeam ONE Business View database with vCenter Server or with other applications. To synchronize categorization data or use the importing and exporting features, open the **Import/Export** section of the **Configuration** view.

Mapping Custom Attributes to Business View Categories

If you are already using vCenter Server custom attributes to categorize your virtual infrastructure, you can map vCenter Server custom attributes to Veeam ONE Business View categories using the **Group Import** wizard. The wizard will associate vCenter Server custom attributes with the Veeam ONE Business View categorization scheme. You can then enable updates of custom attributes to synchronize categorization data stored in the Veeam ONE database with custom attributes stored on the vCenter Server side.

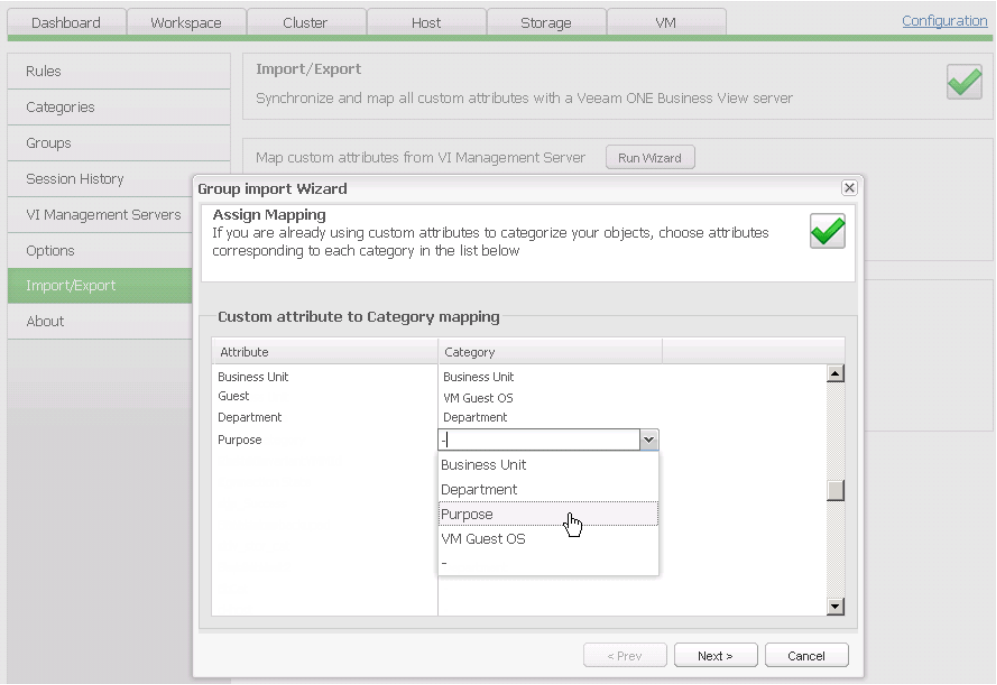
Step 1. Launch the group import wizard

To launch the **Group Import** wizard, follow the next steps:

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Import/Export** on the left of the **Configuration** view.
3. In the **Map custom attributes from VI Management Server** section, click the **Run Wizard** button.

Step 2. Map custom attributes to categories

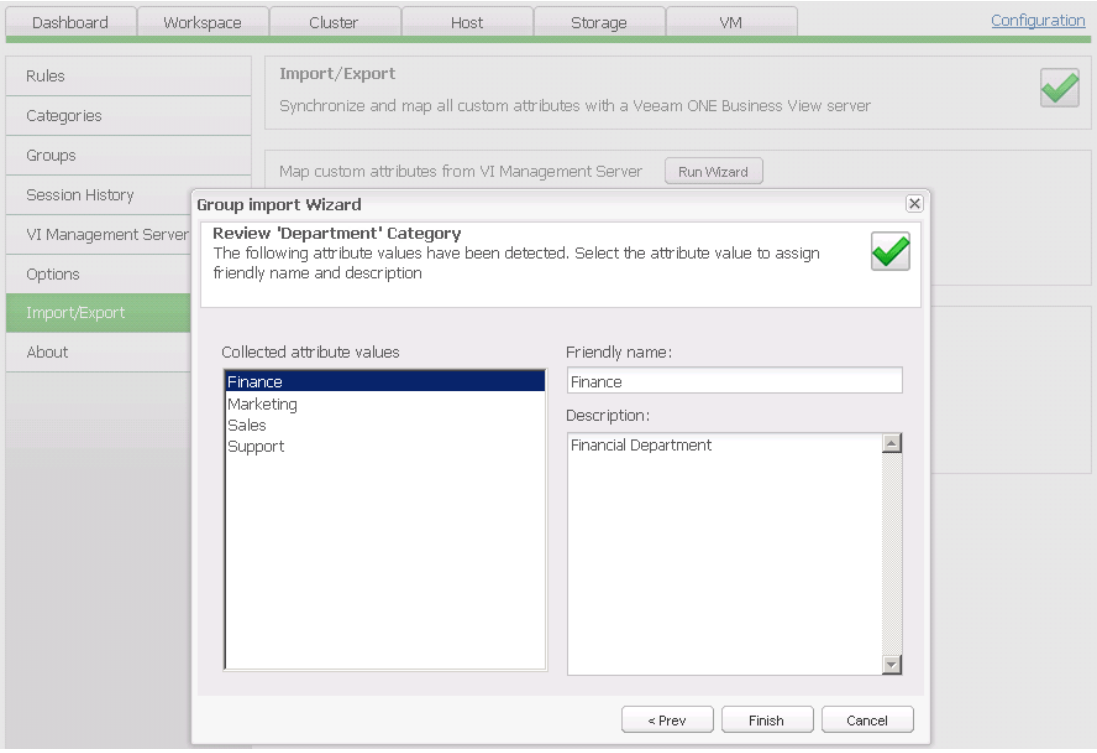
At this step, the **Group Import** wizard displays a list of custom attributes that already exist on the vCenter Server side. To map vCenter custom attributes to Veeam ONE Business View categories, select corresponding values from the list in the **Category** column next to necessary custom attributes.



Step 3. Review custom attribute values

After you mapped vCenter Server custom attributes to Veeam ONE Business View categories, the **Group Import** wizard will display all values of the mapped custom attributes so that you can review and adjust them. The values for mapped categories are displayed in turn, one category per step.

The adjusted custom attribute values will be presented as static groups within corresponding categories (for details on static/dynamic groups, see the Creating Groups section).



The left pane contains all detected values. To adjust a value, click it in the **Collected attribute values** list. As soon as you click a value, its name is displayed in the **Friendly name** field. The friendly name is used as a label to charts in the dashboards. You set any friendly name for a group — this can be helpful, for example, if the existing value contains constrictions or typos or you want to bring the group names to the same style.

In the **Description** field, you can enter a group description. You can change the **Friendly name** and **Description** values at any moment of time: to do so, click **Categories** on the left of the **Configuration** view and edit data of a necessary group as required.

Step 4. Finish working with the wizard

After you made all necessary adjustments, click **Finish**.

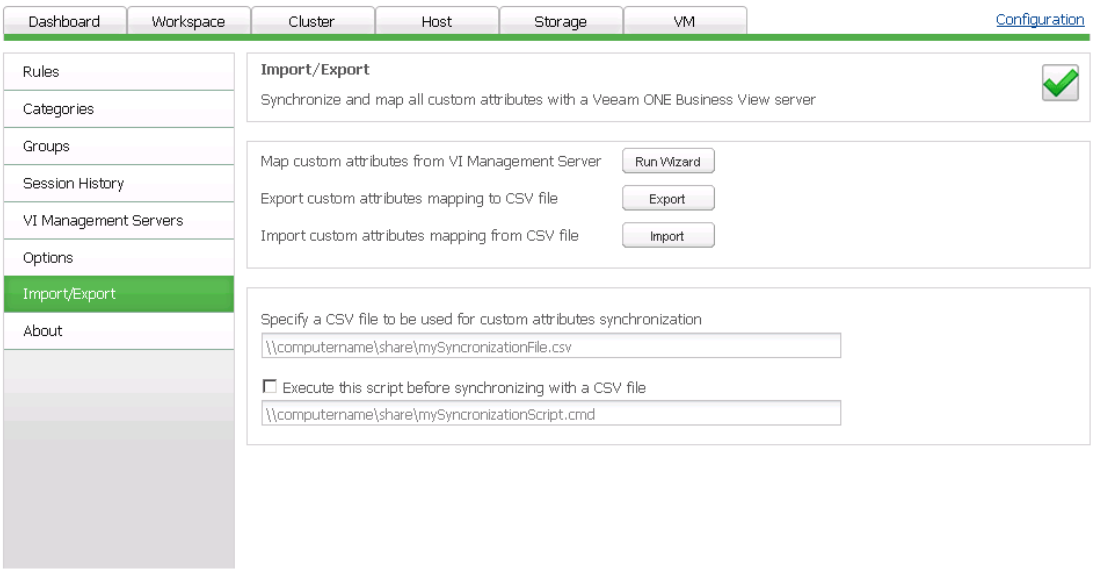
Exporting and Importing Infrastructure Mapping

Veeam ONE Business View allows you to synchronize business topology information with categorization data from third-party software. It lets you import and export data to and from a CSV file that holds infrastructure mapping data and acts as a medium between the two systems.

For example, if you have already categorized your virtual infrastructure objects outside of Veeam ONE Business View, you can describe category values using a Microsoft Excel spreadsheet and then import these values to Veeam ONE Business View.

To make sure that a CSV file is properly structured and will be processed without any errors during import, you can first export custom attributes mapping to a CSV file. To export mapping details into a CSV file, click the **Export** button in the **Import/Export** section of the **Configuration** view.

As an example or template for the necessary file structure, you can create a few groups for the default categories in Veeam ONE Business View, add several objects to them and export data into the CSV file. When you fill the necessary details into the file, use the **Import** button to write categorization data to Veeam ONE Business View.



However, you can also create the CSV file from scratch. In this case, make sure that the file is structured correctly. Every record in the file should contain information about a virtual infrastructure object. The following columns are mandatory for every record:

- **vCenterServer** – name of the vCenter Server or ESX(i) host where the object resides
- **ObjectType** – type of object (possible values are *VirtualMachine*, *HostSystem*, *Storage*, *ClusterComputerResource*)
- **MoRef** – reference number of the object
- **ComputerName** – domain name of the virtual machine
- **IPAddress** – IP address of the virtual machine
- **Name** – name of object in the virtual infrastructure

Other columns in the CSV file must be named as Veeam ONE Business View categories. Such category fields (or cells) accept two types of values: name of a group within the category to which a virtual infrastructure object belongs or the word *Excluded*, if the object should be excluded from categorization.

vCenterServer	ObjectType	MoRef	ComputerName	IPAddress	Name	Category1
server.local	VirtualMachine	vm-01	Win2008-exch	172.16.2.12	Exch01	Group1
server.local	VirtualMachine	vm-02	Win2003-sql	172.16.2.72	SQL01	Excluded

There are several points which you should take into account when creating a mapping file:

1. Objects cannot be included in dynamic groups.
2. Categories and static groups that do not exist in Veeam ONE Business View will be automatically created if they are specified in the CSV file.
3. Virtual infrastructure objects that are already known to Veeam ONE Business View (that is, a data collection job for the corresponding VMware server was already run) will be included into corresponding groups, as specified in the CSV file.
4. You can specify the word *Excluded* in a category cell if an object should be excluded from categorization.

Synchronizing Infrastructure Mapping

Veeam ONE Business View allows you to synchronize infrastructure mapping from third party applications and systems (for example, Active Directory). At the bottom of the **Import/Export** view you can specify a CSV file with the required categorization model, which should be used for

synchronization and, if necessary, a script that creates this CSV file based on data from a third party application or system.

Note The CSV file used for synchronization must be structured correctly. For details, see the Exporting and Importing Infrastructure Mapping section.

The basic procedure for synchronizing infrastructure mapping is as follows:

1. Create the script file.
2. Create a file which runs the script and writes the results into a CSV file.
3. Specify the path to the file which runs the script and path to the resulting CSV file.

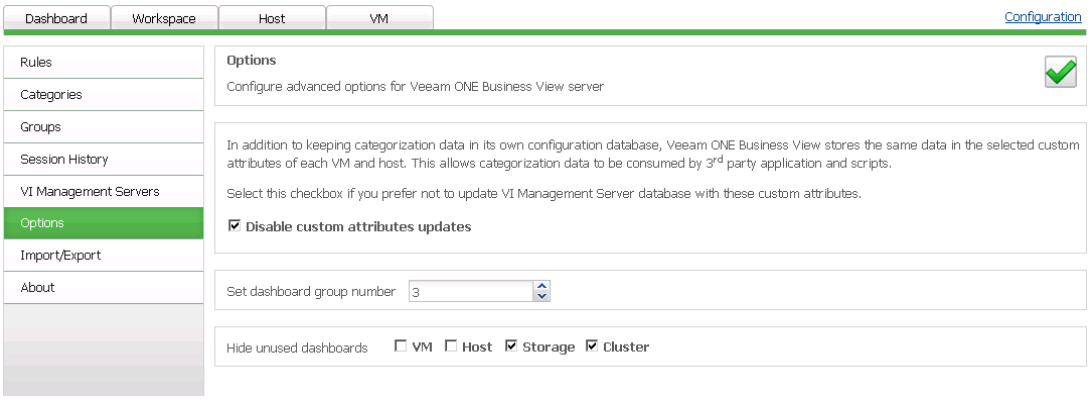
See Appendix C for a description of the above procedure on a sample script.

Configuring Options

To finish configuration of Veeam ONE Business View, you need to review configuration options and adjust them if required.

1. Click the **Configuration** link in the upper right corner of the Veeam ONE Business View window.
2. Click **Options** on the left of the **Configuration** view.
3. Use the **Disable custom attributes updates** check box to define whether categorization data from Veeam ONE Business View database should be written to custom attributes of VMs and hosts on the vCenter Server side.

   By default, this check box is selected, which means that categorization data from the Veeam ONE Business View does not update custom attributes of VMs and hosts in the vCenter Server database. If you clear the check box, Veeam ONE Business View will write categorization data to vCenter Server every time when a collection job for the vCenter Server runs.
4. Use the **Set dashboard group number** box to change the number of groups which are displayed for every category on the Dashboard. For details, refer to the Working with the Dashboard section.
5. If you want to hide some or all of the additional dashboard views, select the **VM**, **Host**, **Storage** and/or **Cluster** check boxes. For details, refer to the Working with the Dashboard section.



CATEGORIZING VI OBJECTS

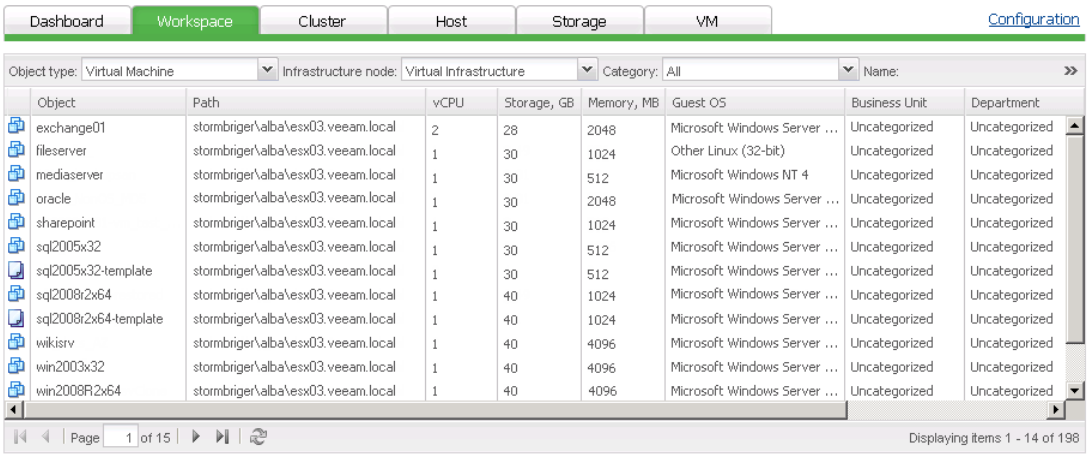
After you have added VMware servers and configured your categorization scheme, you can proceed to categorizing virtual infrastructure objects in your virtual environment.

All major activities on categorizing virtual infrastructure objects can be performed in the **Workspace** view of the application – this is the place where you can manually assign the necessary categorization values to objects of you virtual environment. To learn more, refer to the Assigning Categorization Values section.

To obtain information on categorized, uncategorized and excluded from categorization objects, use the **VM/ Host/Storage/Cluster** dashboard views. The dashboard views also allow you to confirm categorization of virtual infrastructure objects. To learn more, refer to the Confirming Categorization section.

Assigning Categorization Values

The **Workspace** view displays all VMs, hosts, clusters and datastores in the virtual hierarchy. Every virtual infrastructure object is described with a certain set of properties. For example, VMs are described with the following properties: name, path, number of vCPUs, memory and storage resources allocated to it, guest OS, and VM categorization data.

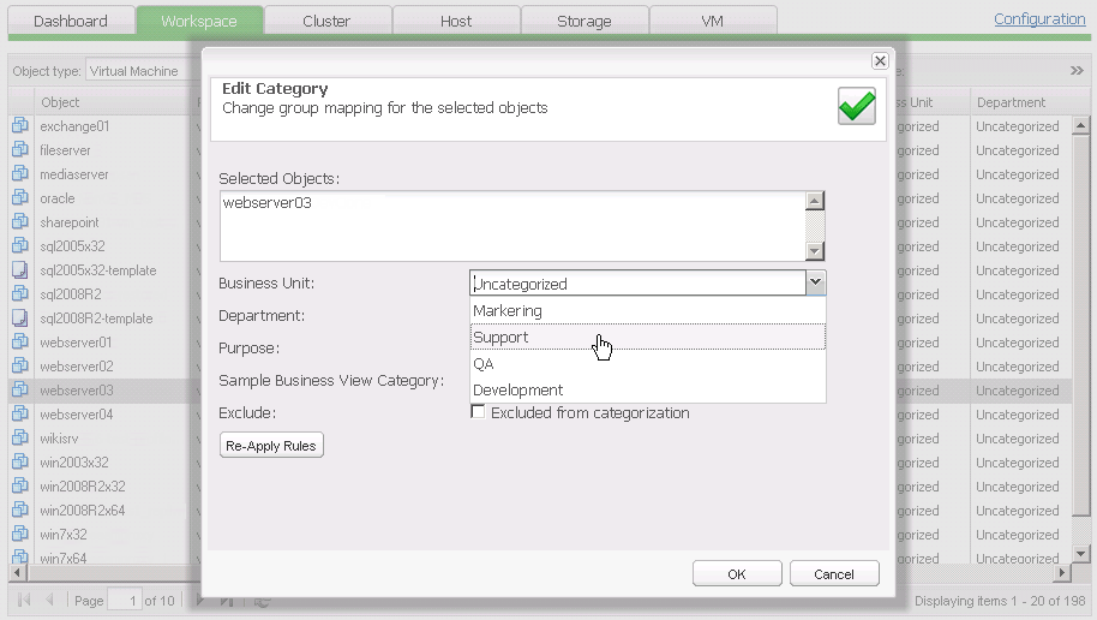


The **Workspace** section is a main means for categorizing VMs, hosts, clusters and datastores in your virtual environment. Using the **Workspace**, you can assign necessary category values to a single virtual infrastructure object or to a number of objects at a time.

Note To be able to categorize virtual infrastructure objects, the user must belong to the *Veeam ONE Administrators* user group. Users who do not belong to this group are not allowed to categorize objects — the **Edit Category** button is disabled for them. For details on Veeam ONE security groups, refer to *Veeam ONE Deployment Guide*.

To facilitate work with virtual infrastructure objects, use filters at the top of the list. To display objects matching specific criteria, select necessary values in the **Object type**, **Infrastructure node**, and **Category** fields and click the **Apply Filter** button.

To assign category values to an object, select it in the list and click the **Edit Category** button on the toolbar (or double-click the object in the list). Then, select necessary values from the category lists.



To assign the same categorization values to several objects at once, select them in the list (use the **[SHIFT]** or **[CTRL]** keys to select multiple items), click the **Edit Category** button and set necessary category values in the displayed window.

To discard your changes and update the categorization data in accordance with existing rules, click the **Re-Apply Rules** button.

Note If an object does not fall under any group by existing rules, all its category settings will be set back to *Uncategorized*.

If you do not want an object to take part in the categorization model, select the **Excluded from categorization** check box. Excluded VMs will not take part in building the business view of your virtual environment.

Confirming Categorization

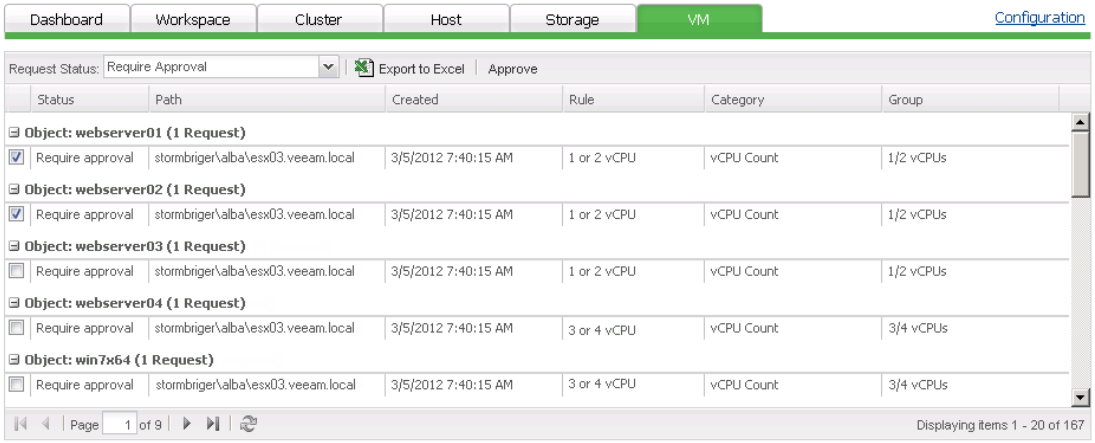
To obtain information on categorized, uncategorized and excluded from categorization objects, open the **VM/Host/Storage/Cluster** dashboard and click the **Details** link in the top right corner. In Veeam ONE Business View, all virtual infrastructure objects are divided into the following groups:

- *Uncategorized* — objects that are not categorized yet.
- *Require Approval* — objects that await categorization approval. These objects fall under categorization rules, but you need to additionally confirm categorization of these objects to include them in corresponding static groups.
- *Approved* — objects that fall under categorization rules and their categorization is already approved.
- *Auto-Approved* — objects that were automatically categorized with the help of categorization rules.
- *Excluded from categorization* — objects that were excluded from categorization.

Use the **Request Status** list to filter the list of objects by their status.

The *Require Approval*, *Approved* and *Auto-approved* groups describe objects that meet conditions of categorization rules. The *Approved* and *Auto-approved* groups do not require any additional actions, while objects from the *Require Approval* group require confirmation to be categorized.

To approve objects for categorization, select check boxes next to necessary records in the list and click the **Approve** button on the toolbar. As a result, the objects will be moved to the *Approved* group.



You can export categorization status list to a Microsoft Excel spreadsheet file via the **Export to Excel** button.

Exporting Object Data to Excel

The **Workspace** view offers a possibility to export object data to an external Microsoft Excel spreadsheet file and save it for sharing or documenting purposes.

To export object data to an XLS file, click the **Export to Excel** button at the top of the list. Veeam ONE Business View will generate an Excel spreadsheet, and you will be offered to save it or open it immediately.

WORKING WITH DASHBOARDS

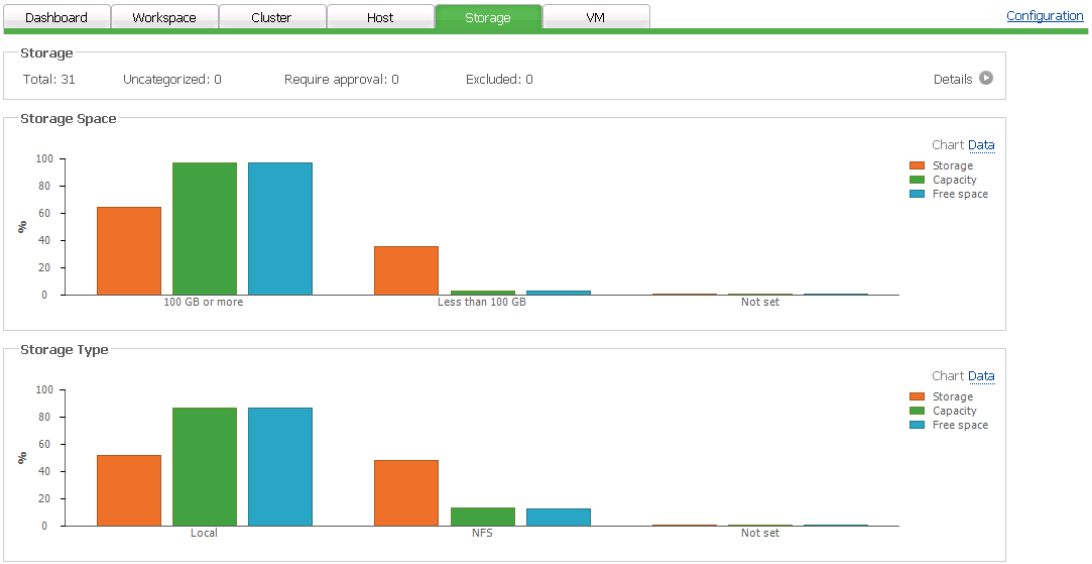
The **Dashboard** view displays summary categorization information about objects in your environment. It acts as a basic monitoring panel allowing you to see an overview of the virtual infrastructure and the categorization model.

The **VM**, **Host**, **Storage** and **Cluster** views display information about the business topology of your virtual environment. These views act as detailed monitoring panels: they present the virtual environment data from the perspective of business view categories. The categorization data is presented both in graphic charts and tables. Each dashboard view is split into category sections that present the data from the business standpoint via graphs and data tables. Each section provides information on how many objects (depending on the selected dashboard view) belong to groups of a specific category, and the total of their vCPU, memory and storage resources.

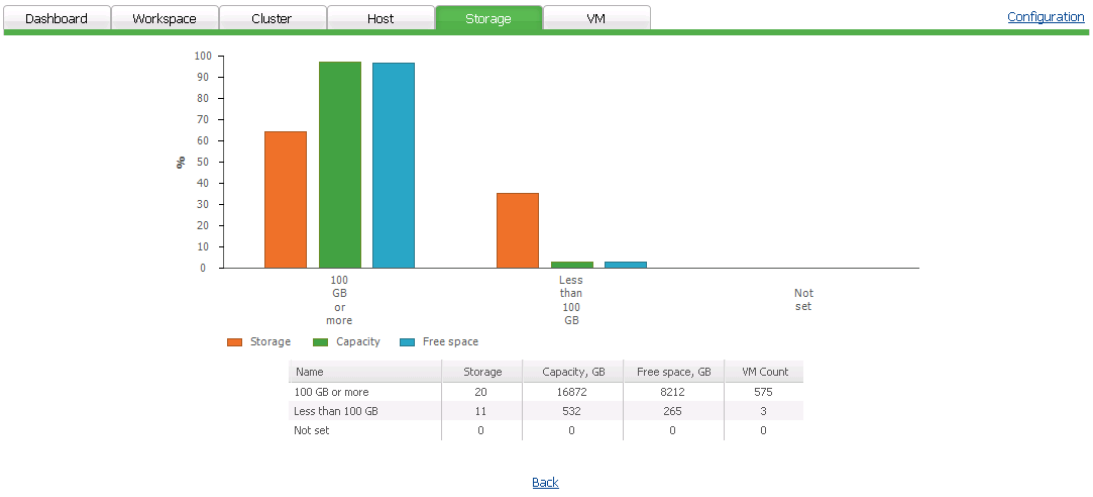
Note If necessary, you can change the number of groups displayed on dashboards. For details, refer to the Configuring Options section.

You can toggle each category section between graphical and table representation via the **Chart** and **Data** buttons on the right side of the each section (above the chart legend).

In the **VM**, **Host**, **Storage** and **Cluster** views, there is also an additional service section at the top which provides information on the number of uncategorized objects, objects awaiting categorization approval and objects excluded from the categorization model. This service section allows the user to confirm object categorization by created categorization rules. To open the categorization approval view, click the **Details** link at the bottom of the section (see the Confirming Categorization for more information on approving categorization).



By default, graphs and data tables for each category display categorization data for up to 3 groups to which the most number of objects belong; plus an additional *Other* group is used to display summary data for objects from all other groups. If you wish to view data on every group in the category on one graph/table, click the graph of the corresponding category.



APPENDICES

Appendix A. Custom Charts for Report-Based Widgets

Veeam ONE Reporter allows you to create custom charts based on the *Custom Infrastructure* report and add these charts on dashboard widgets. You can present various aspects of you virtual environment in charts of the following types:

- Exploded pie chart
- Clustered column chart
- Stacked column chart

Depending on the type of chart you want to create, data sets to be selected and their presentation in the chart may vary. This section provides basic information on presenting data in charts and includes a number of examples that will help you to understand principles of working with custom chart.

Presentation of Data in Charts

To create a custom chart using dashboard widgets, you should select data that you want to present in the chart. As well as in standard charts, charts in Veeam ONE Reporter display series fields, category fields and data fields.

- **Series fields** represent values plotted in the chart. A series field is a set of related data that is distinguished by a unique color and presented in the chart legend.
- **Category fields** represent a criterion that will be used to group series fields. A category field is usually presented as a group of series fields on the horizontal axis.
- **Data fields** represent the type of values that should be aggregated into a single slice, bar or a column in the chart. Refer to the Aggregate Functions in Charts section to learn what types of aggregate functions can be used for data fields in charts.

Every chart type requires a specific set of data – for example, exploded pies are two-dimension charts so you need to select only the series fields and data fields, while for clustered column charts, you need to select series fields, category fields and data fields.

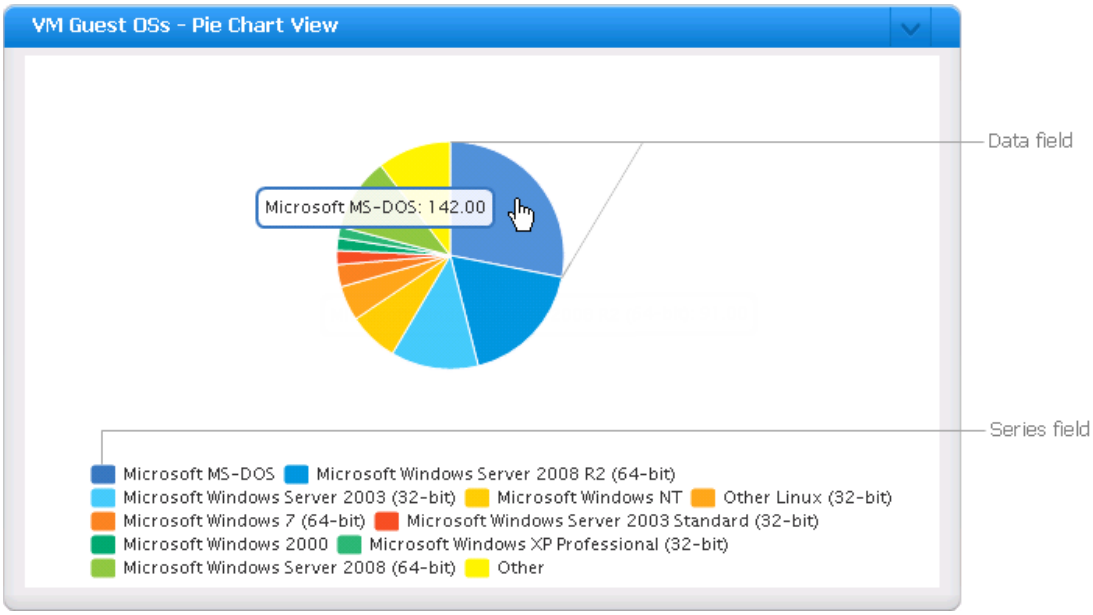
Aggregate Functions in Charts

Widget charts allow you to select one of the following aggregate functions for presenting report data:

Function	Description
Avg	Returns the average of values in a selected data fields.
Count	Returns the number of records in a selected data fields. Records with no values (empty records) are not counted.
CountDistinct	Returns the number of distinct values in a selected data fields.
Max	Returns the maximum value from a selected data fields.
Min	Returns the minimum value from a selected data fields.
Sum	Returns the sum of values in selected data fields

Exploded Pie Charts

Exploded pie charts allow you to show the size of values proportional to the sum of all values. Series fields in exploded pie charts are shown as unique values presented in the chart legend. Data fields are shown as slices that represent aggregate values (that is, a percentage of the whole pie). Category fields are not used for pie charts.



Example

Let's create a chart displaying the number of different OS'es installed on VMs.

The chart will visualize data from a simple report created on the basis of the *Custom Infrastructure* report template with the following report settings:

- **Object type**: Virtual Machine
- **Report columns**: Name, Guest OS

To create an exploded pie chart:

1. In the **Dashboard** section, open the necessary dashboard and launch the **Add widget** wizard.
2. In the **Caption** field, specify the widget name.
3. At the **Widget packs** step, select the *Report based widgets* option.
4. At the **Widget info** step, choose the saved *Custom Infrastructure* report.
5. At the **Widget type** step, select *Custom chart*.
6. At the **Chart type** step, select *ExplodedPie*.

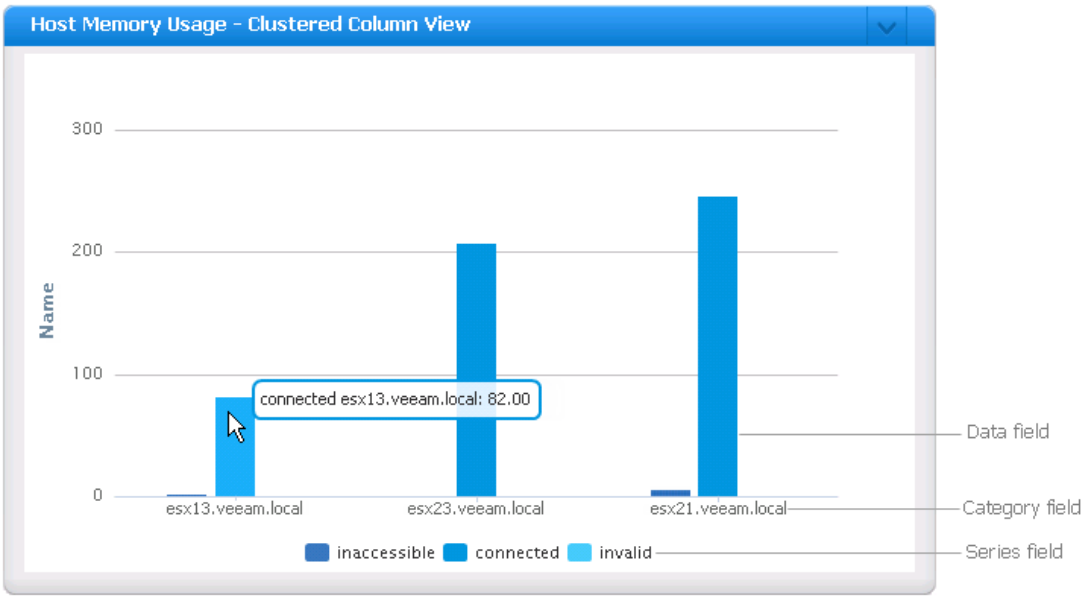
   At the **Add widget** step specify the following settings:

   - Select *Guest OS* as the **Series fields** value.
   - Select *Name* as the **Data fields** value. From the **Aggregate function** list, select *Count*.
7. Finish working with the wizard.

Clustered Column Charts

Clustered column charts allow you to compare values across one or more categories.

Series fields in clustered column charts are shown as unique values presented in the chart legend. Data fields are organized along the vertical axis and shown as columns. Category fields are organized along the horizontal axis and shown as groups of columns.



Example

Let's create a chart that displays connectivity state of VMs on ESX(i) hosts – that is, the number of connected, disconnected, invalid and orphaned VMs on every host.

The chart will visualize data from a simple report created on the basis of the *Custom Infrastructure* report template with the following report settings:

- **Object type**: Virtual Machine
- **Report columns**: Name, Host system, Connection state.

To create a clustered column chart:

1. In the **Dashboard** section, open the necessary dashboard and launch the **Add widget** wizard.
2. In the **Caption** field, specify the widget name.
3. At the **Widget packs** step, select the *Report based widgets* option.
4. At the **Widget info** step, choose the saved *Custom Infrastructure* report.
5. At the **Widget type** step, select *Custom chart*.
6. At the **Chart type** step, select *ClusteredColumn*.

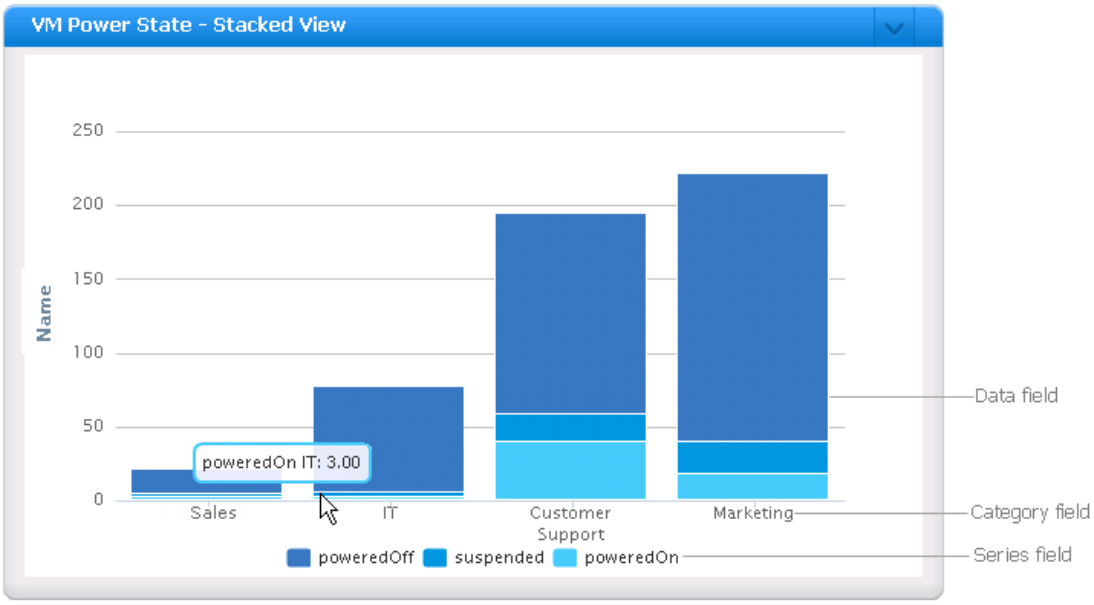
   At the **Add widget** step specify the following settings:

   - Select *Connection state* as the **Series fields** value.
   - Select *Host system* as the **Category fields** value.
   - Select *Name* as the **Data fields** value. From the **Aggregate function** list, select *Count*.
7. Finish working with the wizard.

Stacked Columns Chart

Stacked column charts allow you to present several data series and emphasize their contribution to the whole.

Stacked column charts show relation of series fields to the whole. In stacked columns, series fields are shown as unique values presented in the chart legend. Category fields are organized across the horizontal axis and presented as columns. Data fields are organized across the vertical axis and shown as stacked rectangles.



Example

Let's create a chart that displays the number of powered on, powered off and suspended VMs for every department in a company. The chart will visualize data from a simple report created on the basis of the *Custom Infrastructure* report template with the following report settings:

- **Object type**: Virtual Machine
- **Business View object(s)**: Department
- **Report columns**: Name, Business View: Group, Power state.

To create an exploded pie chart:

1. In the **Dashboard** section, open the necessary dashboard and launch the **Add widget** wizard.
2. In the **Caption** field, specify the widget name.
3. At the **Widget packs** step, select the *Report based widgets* option.
4. At the **Widget Info** step, choose the saved *Custom Infrastructure* report.
5. At the **Widget type** step, select *Custom chart*.
6. At the **Chart type** step, select *StackedColumn*.

   At the **Add widget** step specify the following settings:

   - Select *Power state* as the **Series fields** value.
   - Select *Business View: Group* as the **Category fields** value.
   - Select *Name* as the **Data fields** value. From the **Aggregate function** list, select *Count*.
7. Finish working with the wizard.

Appendix B. Grouping Expression Syntax and Examples

The syntax used in the expressions has the following limitations:

- Logical items (CASE expressions) and methods should not be nested (e.g., it is not allowed to use a CASE expression in another CASE expression, or a method in another method). However, methods can be used to define values in a CASE expression.
- Methods should not be used in a CustomAttribute expression to define the custom attribute name. However, a CustomAttribute expression can be used to define values in methods.

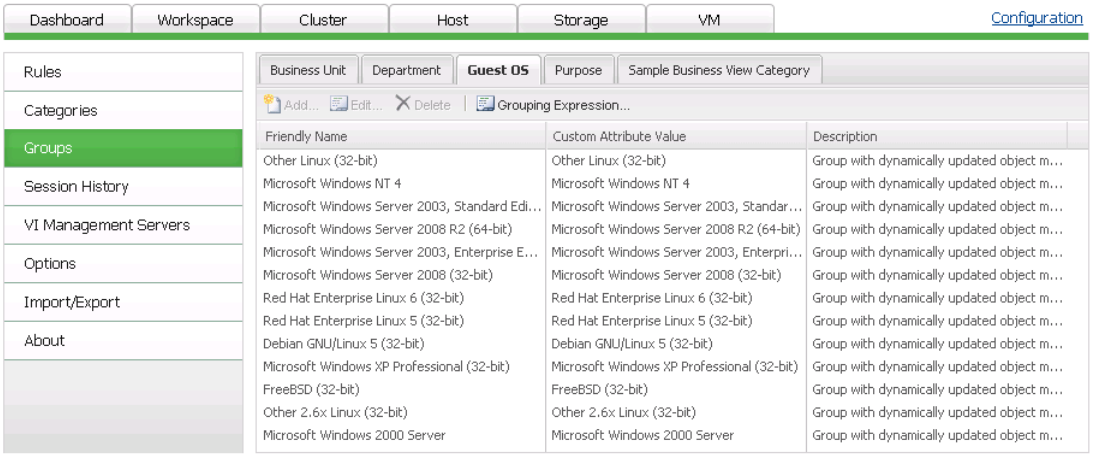
Example 1. Group VMs by guest operating system

To automatically group all your VMs by their guest OS's:

1. Create a dynamic group type category for VMs and name it *Guest OS*.
2. Select this category among the tabs in the **Groups** section, click **Grouping Expression** and specify the following expression for it:

```
GuestOS
```

3. As a result, the *Guest OS* category tab will contain a list of groups of VMs divided by the guest OS's they are running.



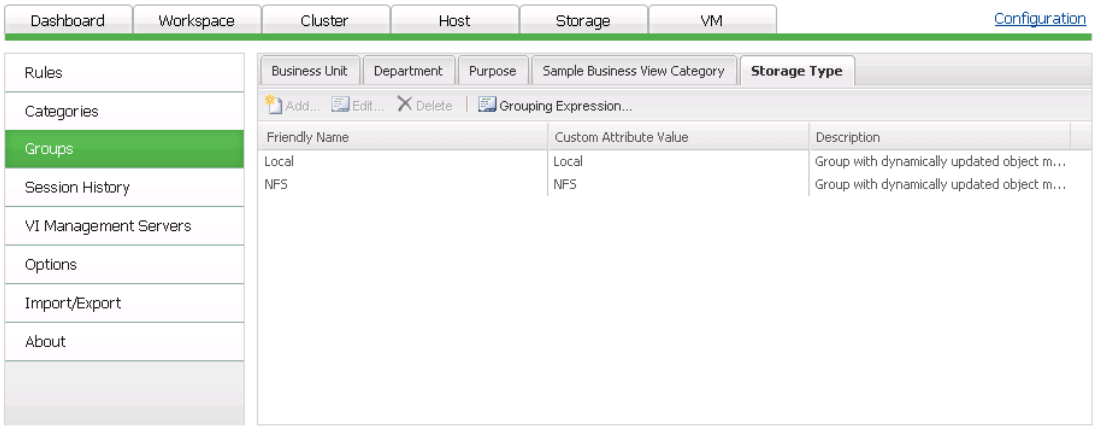
Example 2. Group datastores by type

To automatically group all your storage devices by the type of file system:

1. Create a dynamic group type category for datastores and name it *Storage Type*.
2. Select this category among the tabs in the **Groups** section, click **Grouping Expression** and specify the following expression for it:

```
FileSystemType
```

3. As a result, the *Storage Type* category tab will contain a list of groups of storage devices divided by the file system type they use.



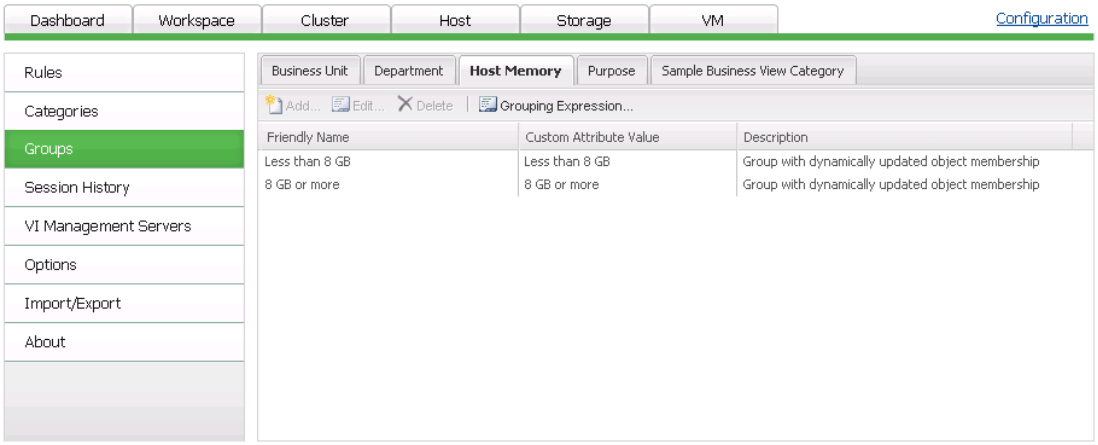
Example 3. Group hosts by amount of physical memory

To automatically divide all hosts into two groups – one with hosts that have 8 GB of physical memory or more and one with hosts that have less than 8 GB of physical memory:

1. Create a dynamic group type category for host systems and name it *Host Memory*.
2. Select this category among the tabs in the **Groups** section, click **Grouping Expression** and specify the following expression for it

```
CASE WHEN Memory >= 8 THEN "8 GB or more" ELSE "Less
than 8 GB" END
```

3. As a result, the *Host Memory* category tab will contain two groups of hosts: one with 8 GB of physical memory or more and one with less than 8 GB of physical memory.



Appendix C. Sample Synchronization Script

In this example a Microsoft PowerShell script is used to create a CSV file from Active Directory infrastructure mapping. Thus, make sure you have Microsoft PowerShell installed before following the described procedure.

Note When creating your own synchronization script, make sure that the resulting CSV file used for synchronization is structured correctly. For details, refer to the Exporting and Importing Infrastructure Mapping section.

Step 1. Create the script file

Create a script file named **AD2CSV.ps1** which uses Active Directory infrastructure mapping to create a CSV file with similar categorization model. Below is an example of what the text of the script file may be like:

```
#define maps. Map groups and categories to specific folder in AD
#("category", "group", "folder in AD", "path to folder in AD")
$maps=
("Location_", "UK_", "Computers UK", "DC=MyDomain,DC=local"),
("Location_", "US_", "Computers US", "DC=MyDomain,DC=local"),
("Department_", "IT_", "IT", "OU=Computers
UK,DC=MyDomain,DC=local"),
("Department_", "Sales_", "Sales", "OU=Computers
UK,DC=MyDomain,DC=local"),
("Department_", "HR_", "HR", "OU=Computers UK,DC=MyDomain,DC=local")

#define constants
#$const_exportFile="c:\\resultFile.csv"
#$const_vCenterServer="MyVC"
$const_vCenterServer=$args[0]
$const_exportFile=$args[1]
$const_objectType="VirtualMachine"

# parse maps and extract categories for furture use
$categories=@()
foreach($map in $maps)
{
    $c=$map[0]
    $exist=0
    foreach($gcat in $categories)
    {
        if($gcat -eq $c)
        {
            $exist=1
            break
        }
```

```
    }
    if($exist -eq 0) { $categories+=$c }
}
#end of extracting categories

# initialize active directory
$root=[adsi]''
$query=new-object system.directoryservices.directorysearcher
$query.searchRoot = $root
$query.searchScope="subtree"

# store results here
$result=@()

foreach($map in $maps)
{
    # initialize variables
    $category=$map[0]
    $group=$map[1]
    $ou=$map[2]
    $path=$map[3]

    # find organization unit
    $query.filter="(ou=$ou)"
    $node=$query.findall() | where {$_.path -match $path}

    # find computers
    $cq=new-object system.directoryservices.directorysearcher
    $cq.SearchRoot=$node.psbase.GetDirectoryEntry()
    $cq.SearchScope="subtree"
    $cq.filter="(objectClass=computer)"
    $computers=$cq.findall()

    foreach($computer in $computers)
    {
        $resultRow=@{} | select vCenterServer, ObjectType,
ComputerName, IPAddress, Name
        $resultRow.vCenterServer=$const_vCenterServer
        $resultRow.ObjectType=$const_objectType
        $resultRow.ComputerName=$computer.psbase.properties.name[0]

        # make a row with specified groups and categories for each
computer
```

```
        foreach($c in $categories)
        {
            $g=""
            if($c -eq $category) { $g=$group }
            $resultRow=$resultRow | select *, @{n=$c; e={$g}}
        }

        # find out add this row or just modify group for category
        $na=1
        foreach($rr in $result)
        {
            # if computer already exists in result, than modify
specified category
            if($rr.ComputerName -eq $resultRow.ComputerName)
            {
                $na=0
                $rr.$category=$group
            }
        }
        # if computer doesn't exist in result add computer with
specified category and group
        if($na -eq 1)
        {
            $result+=$resultRow
        }
    }
}

$result | sort name | export-csv $const_exportFile -
notypeinformation -delimiter ";"
#$result
```

Step 2. Create a file which runs the script file

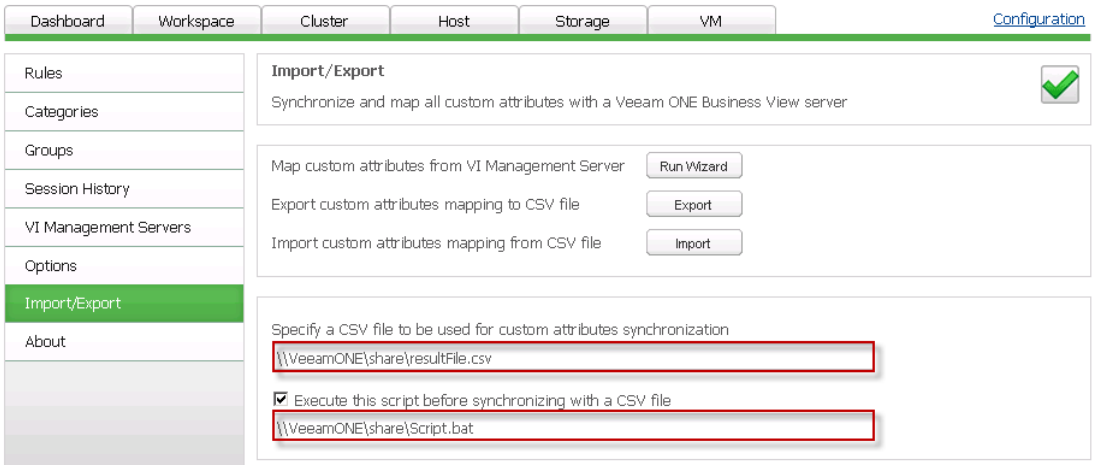
Create a batch file named Script.bat which runs a command to start AD2CSV.ps1 and output its results to resultFile.csv. Below is an example of such command:

```
cmd /c start /wait powershell -command "& 'C:\AD2CSV.ps1' MyVC
c:\resultFile.csv"
```

Note that you need to replace "MyVC" with the name of the vCenter Server you are using.

Step 3. Specify necessary paths

Click **Import/Export** on the left of the **Configuration** view. At the bottom, specify the path to the created batch file (Script.bat) and to the resulting CSV file (resultFile.csv).



The next time you run a collection job, the batch file will run the script, create an output CSV file with the infrastructure mapping from Active Directory and use this CSV file to import the categorization model into Business View. This way your Business View categorization will always be synchronized with Active Directory.

You can also use synchronization without the script file. You can just specify the path to the CSV file and update it manually for synchronization purposes. However, the script file will let you automate these updates in cases when your environment changes often.

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